

Report to Congress:

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# Impact of the Medicare Hospital Prospective Payment System

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1984 Annual Report



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**1984 Annual Report**

Department of Health and Human Services  
Health Care Financing Administration  
Office of Research and Demonstrations  
HCFA Pub. No. 03231

This is the first report in an annual series on the impact of the Medicare Hospital Prospective Payment System (PPS), which was requested by Section 603(a)(2)(A) of Public Law 98-21, the Social Security Amendments of 1983. It is devoted largely to a description rather than a rigorous analysis of PPS and its early impact, for several reasons. First, the data available for the analysis of PPS/non-PPS differences by hospital type were limited to bills received and processed by the Health Care Financing Administration (HCFA) through July 1984 for complete stays through June 1984. Second, the gradual implementation of PPS makes it likely that its full effects will not be felt until future years, when prospective payment has been in place for a while and the affected groups have become more accustomed to its provisions and incentives. In addition, the dynamic nature of the health care sector serves to complicate any attempts to trace observed changes to any specific policy initiative. However, the new system appears to have been implemented smoothly, and to have encouraged substantial changes in the behavior of hospitals and of other major groups within the health care sector.

## ACKNOWLEDGMENTS

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REPORT TO CONGRESS  
IMPACT OF THE  
MEDICARE HOSPITAL PROSPECTIVE PAYMENT SYSTEM  
1984 ANNUAL REPORT  
EXECUTIVE SUMMARY

Introduction

Purpose

The purpose of this Congressionally-mandated series of annual reports is to describe and analyze the impact of the Medicare Hospital Prospective Payment System (PPS) on hospitals, Medicare beneficiaries, other providers of health care, and other payers for inpatient hospital services. In addition, because the impetus for the enactment of the new system stemmed from concern over the financial status of the Medicare program, the impact of the PPS on Medicare program expenditures is also described.

This first report in the annual series, which is to continue through 1987, is devoted largely to a description rather than a rigorous analysis of the PPS and its early impact, for several reasons. At this time, the availability of data suitable for such an analysis is limited--for instance, the comparison of PPS versus non-PPS bills by type of hospital was restricted to bills received and processed by HCFA as of July 1984 for complete stays through June 1984.

Moreover, the gradual way in which the PPS was implemented implies a similarly gradual development of behavioral responses to the new system. It may be several years before the full impact of the PPS is evident. Therefore, while these early data provide an indication of current changes taking place in the provision of health care, they are meant also to develop a foundation upon which to build a more rigorous analysis of the impact of prospective payment in future reports.

These future reports will, in addition to the further analysis of the impact of the PPS on hospitals, Medicare beneficiaries, other payers for inpatient hospital services, and other providers of health care, also address several technical issues specified in the PPS legislation, including the impact of computing DRG prospective payment rates by census division, rather than exclusively on a national basis.

#### Background

Prior to the passage of P.L. 98-21, the Social Security Amendments of 1983, hospitals were reimbursed by Medicare on a retrospective cost basis. Under this system, hospitals were paid whatever they spent; there was little incentive to control costs, because higher costs brought about higher levels of reimbursement. Partly as a result of this system of incentives, hospital costs increased at a rate much higher than the overall rate of inflation.

Recognizing the inherently inflationary incentives provided by retrospective cost-based reimbursement, the Congress legislated several interim changes in the Medicare reimbursement system, as part of P.L. 97-248, the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA). In addition, the Department of Health and Human Services was directed to propose a plan for the prospective payment of

hospitals under Medicare, which would provide built-in incentives for hospital management efficiency. A report containing such a proposal was delivered to the Congress in December 1982, and a prospective payment system for Medicare inpatient hospital services--the PPS--was legislated in the spring of 1983. Implementation of the PPS began on October 1, 1983.

#### The Medicare Hospital Prospective Payment System

#### The Rationale for Prospective Payment

Prospective payment provides hospitals with an explicit set of payment rates per unit of output. From the perspective of the Medicare program, prospective payment rates have four essential characteristics:

- They are determined in advance and fixed for the fiscal period to which they apply;
- The payment rates for any individual hospital are not automatically determined by the level or pattern of its present or past incurred costs or charges;
- They constitute payment in full for the specific unit of service; and
- Each hospital keeps (or loses) the difference between the payment rate and its cost for that unit of care.

These characteristics, it is hoped, provide strong financial incentives for hospitals to control their input costs and resource use, while maintaining the quality of health care at its previous level.

Prospective payment thus provides a potential solution to the problem of increasing hospital expenditures that threatens the solvency of the Medicare program. The success or failure of prospective payment will be determined by its ability to effect a suitable change in the behavior of those who manage the nation's hospitals.

#### Development of the PPS

The most important overall criterion in evaluating the new Medicare prospective payment system is its effect on hospital costs--so long as there is no decline in the quality of health care. Within the context of this overall objective, the Department established several general goals for the new payment mechanism:

- The system should continue to ensure beneficiary access to quality health care;
- It should be capable of being implemented quickly;
- It should be easy to administer;
- It should ensure predictability of government outlays;
- It should establish the Federal government as a prudent buyer of services;

- It should help hospitals attain predictability of their Medicare revenues;
- It should reduce the hospital cost reporting burden; and
- It should provide incentives for hospital management flexibility, innovation, planning, and control.

These goals reflect 16 years of experience with cost-based reimbursement and ten years of extensive experimentation with various payment alternatives.

In order to achieve these goals, a system was designed that would pay a single flat rate per type of discharge, as determined by the classification of each case into a diagnosis-related group (DRG). The purpose of DRG's is to classify patients into groups that are clinically coherent and homogeneous with respect to resource use. Such a classification scheme would allow for equitable payment across hospitals, in that comparable services can be comparably remunerated.

#### PPS Design Features

Under the PPS, Medicare payment to most hospitals for Part A inpatient operating costs (routine services, ancillary services, and intensive care) is made on the basis of a prospectively determined rate for each DRG. This rate is to be considered payment in full for the operating costs generated by the case, and hospitals are prohibited from charging beneficiaries more than the statutory

deductible and coinsurance amounts. Capital and direct medical education costs, and kidney acquisition costs incurred by approved renal transplantation centers, as well as outpatient costs and Part B inpatient costs, continue--for the time being--to be reimbursed on a retrospective basis.

The PPS replaces the retrospective cost-based reimbursement methodology previously in effect, and supersedes the cost per case limits and rate of increase ceiling provisions contained in the TEFRA legislation. However, payments under the PPS through FY 1985 are structured to be "budget neutral" with respect to TEFRA; that is, they are to be no more and no less than those projected under TEFRA provisions.

The PPS applies to all hospitals participating in the Medicare program, except those hospitals or units specifically excluded, beginning with each hospital's first cost reporting period starting on or after October 1, 1983. In order to facilitate the transition to the PPS, the new methodology is to be implemented over a three-year phase-in period, during which a declining portion of the total prospective payment rate is to be based on the hospital's own historical costs. This hospital-specific rate is to be combined with a Federal rate, which, in turn, is a combination of the appropriate regional and national rates per discharge.

There are 18 different sets of regional rates, corresponding to urban and rural areas in each of the nine census divisions, and two sets of national rates, one each for urban and rural hospitals. Beginning with

the fourth year of the PPS (FY 1987), Medicare payment for inpatient operating costs is to be fully determined by the urban or rural national rate per discharge.

Certain types of hospitals and units have been excluded from the PPS, pending the development of suitable prospective payment mechanisms. Psychiatric, rehabilitation, children's, and long-term care hospitals are currently in this category, as are distinct-part psychiatric and rehabilitation units of acute care hospitals. In addition, a special limited-time exclusion has been provided for alcohol/drug treatment hospitals and units.

Hospitals located outside of the 50 states and the District of Columbia are also currently excluded from the PPS. Also, hospitals in Maryland, Massachusetts, New Jersey, and New York have been waived from inclusion in the PPS because they were involved in demonstrations when P.L. 98-21 was enacted.

Certain types of hospitals are accorded special treatment under the PPS, including sole community providers, Christian Science sanatoria, cancer treatment and research centers, and regional referral centers.

#### Prospective Payment Amounts

Prospective payment rates are determined by three components:

- A standardized payment amount, which represents the average operating cost for a typical Medicare inpatient stay, exclusive of case-mix, area wages, and teaching costs;
- A wage index, which represents the average wage level in each urban or rural area relative to the national average level across all areas; and
- A weighting factor for each DRG, which represents the relative costliness of a hospital discharge in that DRG compared to the typical Medicare discharge.

In general, the prospective payment rate for a Medicare discharge in a particular hospital would be determined by first adjusting the standardized payment amount by the area wage index for the hospital's area, and then multiplying by the weighting factor for the DRG into which the patient has been categorized.

In addition to the prospective payment rate per discharge, hospitals may receive other payments for Medicare Part A inpatient services. These additional payments may either be in recognition of the existence of certain conditions beyond the scope of the PPS, or for "pass-through" costs that cannot yet appropriately be incorporated into the PPS mechanism. Included in the former category are payments for "outlier" cases (atypical cases requiring exceptionally long stays or generating exceptionally high costs compared to the overall distribution of cases in the DRG), Medicare bad debts, and indirect medical education costs. The

latter group includes capital costs, direct medical education costs, and kidney acquisition costs.

#### Utilization and Quality Review

Each hospital under the PPS is required to have entered into an agreement with a Utilization and Quality Control Peer Review Organization (PRO). The function of the PRO program, which was established under the Peer Review Improvement Act of 1982 (Subtitle C of P.L. 97-248), is to provide for the review of:

- The validity of diagnostic and procedural information provided by the hospital;
- The completeness, adequacy, and quality of care;
- The appropriateness of admissions and discharges; and
- The appropriateness of care for which outlier payments are made.

Thus, the PRO's are established as safeguards of the medical necessity, appropriateness, and quality of care. PRO findings of inappropriate or substandard care may result in denial of payment or, if a pattern of prohibited actions is found, in the termination of the Medicare provider agreement.

#### Summary of Findings

This report contains some findings that describe the impact of the PPS on hospitals, Medicare beneficiaries, other payers for inpatient hospital services, other providers of health care, and the Medicare program itself during the first year of Medicare prospective payment. The status of program implementation is also

described, because hospitals have gradually become subject to the PPS during its first year. Most of the aggregate-level findings summarized below are based on FY 1984 data processed at HCFA through November 1984. The hospital-level data are from a PPS Impact Data Base, composed of patient bill records for the period October 1983-June 1984 that were processed at HCFA through July 1984.

#### Program Implementation

- A total of 5,405 hospitals--81 percent of all Medicare-certified hospitals in the United States--were operating under the PPS by the end of September 1984. This represents virtually 100 percent of all hospitals subject to coverage under the new payment system.
- Because hospitals were brought under prospective payment according to their own fiscal year starting dates, the proportion of all FY 1984 inpatient hospital bills paid under the PPS and processed at HCFA through September 1984 was 37 percent. Excluding long-stay hospitals, excepted hospitals and units, and hospitals in waiver States, this figure rises to almost 45 percent.
- As of September 1984, the following types of hospitals were excluded from payment under the PPS:

-- short-stay hospitals in waiver States:	552
-- psychiatric hospitals:	439
-- rehabilitation hospitals:	49
-- alcohol/drug hospitals:	25
-- long-term care hospitals:	83

-- children's hospitals:	<u>47</u>
-- TOTAL	1,195

- The following types of units were excepted from payment under the PPS as of September 1984:
 

-- psychiatric units:	722
-- rehabilitation units:	308
-- alcohol/drug units:	216
- In addition, the following types of hospitals were accorded special treatment under the PPS as of September 1984:
 

-- sole community hospitals:	304
-- cancer treatment and research hospitals:	4
-- regional referral centers:	6
-- hospitals which previously allowed extensive direct billing under Part B:	6
- As required by law, HCFA had signed contracts establishing 54 PRO's (one for each State, the District of Columbia, Guam/American Samoa, Puerto Rico, and the Virgin Islands) to monitor and review inpatient care utilization and quality by the deadline of November 15, 1984.
- Over 1.1 million PPS admissions had been reviewed by a PRO or other medical review entity through September 1984. Of the admissions reviewed, 2.5 percent were denied, indicating an aggressive approach to utilization and quality review under the PPS.

- Denial rates through September 1984 for procedure reviews were as follows:
  - pacemaker insertions: 1.5%
  - other procedures: 2.4%
- The percentages of transfer cases denied through September 1984 were:
  - psychiatric unit transfers: 2.8%
  - rehabilitation transfers: 6.5%
  - alcohol/drug transfers: 11.6%
  - swing bed transfers: 5.2%
  - transfers from a PPS hospital to any other hospital: 2.4%
- Almost 100,000 cases had been reported through September 1984 of patients being admitted to a hospital within seven days of a previous discharge. Reviews had been completed of about 85 percent of these cases, and 3.8 percent of those reviewed were denied.
- Review of outlier cases resulted in the denial of 10.6% of total day outlier days (79,566 days) and 4.3% of total cost outlier charges (\$6,512,237) reviewed through September 1984.

#### Impact on Hospitals

- Projected figures for FY 1984 show a decrease of 1.7 percent in Medicare short-stay hospital admissions, contrary to the increase in admissions that was

anticipated when the PPS was enacted. This translates to a decrease of 3.5 percent in admissions per thousand Medicare Hospital Insurance enrollees.

- Estimated length of stay for all Medicare short-stay hospital discharges in FY 1984 was 9.0 percent lower than in FY 1983--this represented the largest decline in the history of the Medicare program. Medicare length of stay appears to be significantly lower than would have been projected from pre-PPS trends.
- Data from the PPS Impact Data Base compiled for this report (consisting of bills received and processed by HCFA through July 1984 for complete stays through June 1984 in short-stay hospitals not in waiver States) indicate an 8.5 percent lower average length of stay for PPS than for complete non-PPS Medicare bills. However, these data probably result in a substantial under-statement of the PPS/non-PPS difference. Preliminary findings from data on for FY 1984 stays, rather than bills, show that PPS stays were, on average, 14.4 percent shorter than were non-PPS stays at the same group of hospitals.
- The Case-Mix Index (CMI) for PPS bills is about two percent higher than that for complete non-PPS bills received during FY 1984, according to the PPS Impact data. However, the PPS/non-PPS difference in CMI was 4.5 percent for hospitals in the Pacific region, 8.9 percent for teaching hospitals with high concentrations of residents, and 3.8 percent for proprietary hospitals.
- The observed changes in the CMI seem to reflect shifts among the most frequent DRG's between 1981 and FY 1984:

- A simulation of FY 1984 payments including the DRG payments and the capital and medical education payments indicates that, had Medicare payments been based completely on a regional Federal rate, teaching hospitals would have received an estimated 30.1 percent more in DRG-based payments per case than would non-teaching hospitals. Also, teaching hospitals would have received an additional 30.4 percent in other payments under a 100 percent Federal payment-based PPS, primarily due to direct and indirect medical education payments, and non-teaching hospitals would have received correspondingly less due to budget neutrality.

#### Impact on Medicare Beneficiaries

- Several initiatives have been taken to monitor Medicare beneficiaries' access to health care and the quality of that care. In addition to the PRO program, HCFA's survey and certification program is being revised to place more emphasis on outcome-oriented criteria in the Medicare Conditions of Participation. The potential of the Medicare swing-bed program for improving access to care under the PPS is currently being examined, and several other Federal, State, and private efforts are being made to monitor access and quality.
- The Department's Office of the Inspector General is working with HCFA to identify potential problems in the Medicare system.
- Several intramural and extramural studies are being conducted and planned to evaluate the impact of the PPS on access and quality.

- of the 25 most frequent DRG's, all five that involve admissions for surgical procedures increased in relative frequency between 1981 and FY 1984;
- . -- all three of the DRG's in this group (other than DRG 468) that have very high relative weights (i.e., over 2.0000) increased in relative frequency; and
- of the 11 DRG's in this group which experienced declines in frequency, eight have low relative weights (i.e., under 1.0000).

- An analysis of preliminary data from PPS hospital bills indicates that the percentage of outlier cases and, consequently, the percentage of outlier payments, are lower than was projected at the outset of the PPS. Also, the ratio of cost outliers to day outliers was found to be greater than was originally projected.
- The PPS Impact data indicate that hospitals in New England, urban hospitals, and teaching hospitals were reporting higher than average percentages of outlier cases.
- The percentage of discharges to other short-stay hospitals is three times as high among PPS bills as among non-PPS bills in the PPS Impact Data Base.
- Data from hospital bills received by HCFA indicate that charges are lower, and the ratio of payments to charges is higher, under the PPS.



- A simulation of FY 1984 payments including the DRG payments and the capital and medical education payments indicates that, had Medicare payments been based completely on a regional Federal rate, teaching hospitals would have received an estimated 30.1 percent more in DRG-based payments per case than would non-teaching hospitals. Also, teaching hospitals would have received an additional 30.4 percent in other payments under a 100 percent Federal payment-based PPS, primarily due to direct and indirect medical education payments, and non-teaching hospitals would have received correspondingly less due to budget neutrality.

#### Impact on Medicare Beneficiaries

- Several initiatives have been taken to monitor Medicare beneficiaries' access to health care and the quality of that care. In addition to the PRO program, HCFA's Survey and Certification program is being revised to place more emphasis on outcome-oriented criteria in the Medicare Conditions for Participation. The potential of the Medicare Swing-Bed program for improving access to care under the PPS is currently being examined, and several other Federal, State, and private efforts are being made to monitor access and quality.
- The Department's Office of the Inspector General is working with HCFA to identify potential problems in the Medicare system.
- Several intramural and extramural studies are being conducted and planned to evaluate the impact of the PPS on access and quality.

- The discussion in this report of the impact of the PPS on Medicare beneficiaries is restricted to the analysis and description of baseline (pre-PPS) data, mostly from 1981, because more recent person-specific data are not yet available.
- Future reports will compare pre-and post-PPS experience to assess the impact of the new payment system on access and quality.

#### Impact on Other Providers of Health Care

- Preliminary survey data indicate that physicians are being encouraged to reduce ancillary services, shorten hospital lengths of stay, and encourage outpatient testing.
- There are also signs of increased long-term care activity:
  - The estimated increase in skilled nursing facility (SNF) admission notices processed by HCFA during FY 1984 was 5.7 percent, compared with 4.7 percent in each of the two previous years.
  - The percentages of bills on which patients were reported as discharged to SNF's, intermediate care facilities (ICF's), and home health agencies (HHA's) were all 2.5 to 3 times as high for PPS hospitals than for non-PPS hospitals, according to the PPS Impact data.

#### Impact on Other Payers for Inpatient Hospital Services

- A number of States are adopting DRG-based prospective payment methodologies for Medicaid inpatient hospital services. As of October 1, 1984, four

States had begun implementing such systems: New Jersey, Ohio, Pennsylvania, and Utah. Michigan, South Dakota, and Washington have developed DRG-based systems which were about to be implemented at last report, and other States which are reportedly considering the implementation of such payment systems include Connecticut, Indiana, Minnesota, North Carolina, Oregon, and Wyoming.

- The Blue Cross and Blue Shield plans, however, seem to be relying more on alternative arrangements, such as health maintenance organizations (HMO's) or preferred provider organizations (PPO's), to control costs. At last report, only the Kansas, Nebraska, and Oklahoma plans had DRG-based payment systems. Several other plans use some form of prospective pricing, including Arizona, Connecticut, Michigan, Minnesota, Rhode Island, and Des Moines, Iowa.
- No evidence is yet available regarding the shifting of cost burdens to other payers under the PPS.

#### Impact on Medicare Program Expenditures

- The PPS appears to have slowed the increase in Medicare inpatient hospital payments. Although this increase is still above the general rate of inflation, it appears to represent a downturn in the rapid growth of inpatient hospital payments that was seen as the major threat to the solvency of the Medicare Trust Funds. The estimated real rate of growth (i.e., the rate of growth after adjustment for the overall rate of inflation) in Medicare inpatient hospital payments in FY 1984 was 3.8 percent, compared to an annual 10.0 percent real rate of increase between FY 1973 and FY 1982.

- The growth rate of Medicare outpatient hospital payments also was lower in FY 1984 than it has been in recent years, although the estimated 7.3 percent real increase in Medicare outpatient hospital payments for FY 1984 was almost twice as high as the real increase in inpatient hospital payments for FY 1984.
- Medicare physician payments also grew at a slower rate in FY 1984 than they had in recent years. The real increase in Medicare physician payments for FY 1984 was 6.2 percent, compared to an annual 8.9 percent real rate of increase between FY 1973 and FY 1982. The degree to which the Medicare physician payment rate "freeze" enacted by the Congress affected this reduction in growth is difficult to ascertain.
- Medicare skilled nursing payments represent a shrinking share of overall Medicare benefit payments. Medicare payments for skilled nursing services grew at an estimated real rate of 4.2 percent in FY 1984. Although this rate is only slightly higher than that for inpatient hospital services, it should be noted that skilled nursing payments decreased in real terms between FY 1973 and FY 1982, at an annual rate of 0.3 percent.
- The share of Medicare home health payments has tripled in the past 12 years. In FY 1984, the increase in Medicare payments for home health services was over 20 percent for the fourth consecutive year. The real increase in Medicare home health payments for FY 1984 was 17.8 percent, compared to an annual 16.4 percent real rate of increase between FY 1973 and FY 1982.

- The growth of total Medicare benefit payments appears to be leveling off, apparently due in large part to the lower rate of growth of inpatient hospital payments--the real growth rate of total Medicare benefit payments was 5.2 percent in FY 1984, compared with 9.6 percent for FY 1983, and 10.7 percent for the pre-TEFRA period of FY 1973-82.
- Real benefit payments per Medicare beneficiary grew by only 3.4 percent in FY 1984, compared with real growth rates of 7.6 percent for FY 1983 and 8.0 percent for FY 1973-82.

#### Conclusions

The data presented in this report describe several aspects of the performance of the health care sector during the first year of the Medicare Hospital Prospective Payment System. Although the PPS directly affects only hospital behavior, it seems likely that the impact of the new system will be felt by many other groups of providers, consumers, and payers for health care. Moreover, although the major thrust of prospective payment is economic in nature, the PPS may have an effect on the access to health care, and on its quality, as well.

For the first year, however, much of the impact of the PPS is difficult to measure, and even more difficult to conclusively attribute to the new system. As discussed above, the data available for the analysis of PPS/non-PPS differences by hospital type were limited to bills received and processed by HCFA through July 1984 for complete stays through June 1984. In addition, the gradual implementation of the PPS makes it likely that its full effects will not be felt until future years,

when prospective payment has been in place for a while and the affected groups have become more accustomed to its provisions and incentives. Also, the dynamic nature of the health care sector serves to complicate any attempts to trace observed changes to any specific policy initiative.

The problem of attribution will continue to arise as the impact of the PPS is assessed in the coming years. Moreover, the implications of observed changes in the health care sector will be difficult to interpret. The possibility of trade-offs between economic considerations, quality, and access to care must be considered as the empirical evidence on the impact of the PPS is analyzed.

Nonetheless, however valid the reservations about using early data to draw conclusions about the impact of the PPS, it is important to at least attempt some tentative observations about the changes occurring during the first year of prospective payment. These observations are necessary to indicate whether progress is being made toward accomplishing the objectives of the new system--whether or not the observed changes can be conclusively attributed to the PPS.

The findings reported herein lead to several conclusions about the impact of the PPS in its first year. The new system appears to have been implemented smoothly, and to have encouraged substantial changes in the behavior of hospitals and of other major groups within the health care sector. Many of these changes are as anticipated by those who designed and enacted the PPS, although some changes--particularly the drop in Medicare admissions--were not anticipated. The rate of growth of Medicare benefit payments appears to have decreased under the PPS, led by the decline in inpatient hospital payments. Furthermore, there is no systematic

evidence thus far of declines due to the PPS in access to health care or in the quality of that care. Thus, early evidence on the new system indicates that it is accomplishing many of its stated objectives, without any major problems. Based on these findings, no legislative changes are recommended in this report.



Chapter 1  
**INTRODUCTION**

**Purpose**

This is the first in a series of four annual reports to be prepared by the Department of Health and Human Services to assess the implementation and the impact of the Medicare Hospital Prospective Payment System (PPS). The PPS was created by P.L. 98-21, the Social Security Amendments of 1983. Section 603 (a)(2)(A) of P.L. 98-21 requires the Secretary of Health and Human Services to:

"....study and report annually to the Congress at the end of each year (beginning with 1984 and ending with 1987) on the impact of the payment methodology under Section 1886(d) of the Social Security Act during the previous year, on classes of hospitals, beneficiaries, and other payors for inpatient hospital services, and other providers, and, in particular, on the impact of computing DRG prospective payment rates by census division, rather than exclusively on a national basis."

Each annual report is also to include recommendations for such changes in legislation as the Secretary deems appropriate.

## Context

The PPS represents a dramatic departure from the previous Medicare hospital reimbursement system. In order to provide an appropriate context for describing and evaluating the new system, it is necessary to understand why and how it was implemented, and its expected results. This context is briefly summarized below, and discussed in more detail in the following chapter.

### Background

Prior to the passage of P.L. 98-21, hospitals were reimbursed by Medicare on a retrospective cost basis. Under this system, hospitals were paid essentially whatever they spent; there was little incentive for hospitals to control costs, since higher costs brought about higher levels of reimbursement. Partly as a result of this system of incentives, hospital costs increased at a rate much higher than the overall rate of inflation--from 1967 to 1981, hospital expenses per inpatient day increased at an annual rate of 13.4 percent,<sup>1</sup> compared with an economy-wide inflation rate of 7.4 percent.<sup>2</sup> Medicare hospital expenditures increased at an annual rate of 17.9 percent during this period.<sup>3</sup> As a result of these increases, health care expenditures are claiming an ever higher proportion of our gross national product (GNP). While health care expenditures accounted for 6 percent of the GNP in 1965, they currently represent more than 10 percent of the GNP.<sup>4</sup>

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<sup>1</sup> U.S. Department of Health and Human Services. Health, United States, 1983. DHHS Publication No. (PHS) 84-1232, p. 275.

<sup>2</sup> *Ibid.*, p. 263.

<sup>3</sup> *Ibid.*, p. 280.

<sup>4</sup> *Ibid.*, p. 259.

Recognizing the inherently inflationary incentives provided by retrospective cost-based reimbursement, the Congress legislated several interim changes in the Medicare reimbursement system, as part of the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA). In addition, the Department of Health and Human Services was directed to propose a plan for the prospective payment of hospitals under Medicare, which would provide built-in incentives for hospital management efficiency. A report containing such a proposal was delivered to the Congress in December 1982,<sup>5</sup> and a prospective payment system for Medicare inpatient hospital services--the PPS--was legislated in the spring of 1983. Implementation of the PPS began on October 1, 1983.

### Implementation

With the implementation of the PPS, the Medicare program has begun to pay hospitals in 46 States and the District of Columbia on the basis of a prospectively determined price for each type of case. For purposes of payment, cases have been categorized into 468 diagnosis-related groups (DRG's), which are structured according to clinical coherence and similarity of resource requirements. At present, psychiatric, rehabilitation, children's, long-term, and alcohol/drug hospitals are excluded from the PPS, as are qualifying psychiatric, rehabilitation, and alcohol/drug distinct-part units in acute care hospitals, and hospitals outside the 50 States and the District of Columbia. Hospitals in Maryland, Massachusetts,

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<sup>5</sup> U.S. Department of Health and Human Services. Report to Congress: Hospital Prospective Payment for Medicare. December 1982.

New Jersey, and New York were waived from inclusion at the inception of the PPS, because they were participating in demonstrations of other payment systems.<sup>6</sup>

### Expectations

The change from cost-based to prospective price payment represents a fundamental shift in the role of the Medicare program within the health care system. Rather than validating cost increases by reimbursing the hospital for actual costs incurred, the PPS allows the Government to become a more prudent purchaser of hospital care by paying a fixed price for a known and defined product--the hospital case. The PPS is thus designed to change hospital behavior by directly altering the economic incentives confronting hospital managers and, to a lesser extent, the physicians who provide care in the Nation's hospitals.

Under the PPS, hospitals are at risk for all costs above the prospectively determined payment level for each type of case, and they are permitted to retain any surplus. In so divorcing the individual hospital's level of reimbursement from its production costs, the PPS encourages a shift in the thinking of hospital administrators away from the concept of numerous hospital activity cost centers (e.g., laboratory, pharmacy, etc.) and toward the concept of overall profit as applied to

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<sup>6</sup> The waiver status of hospitals in New Jersey has since been continued under authority of Section 1886(c) of the Social Security Act. Hospitals in the other three States listed above currently retain their demonstration waiver status.

each case. Thus, administrators are induced to improve their hospitals' financial positions by operating their institutions more efficiently--that is, by reducing the cost of hospital care.

The behavioral changes that are expected to occur under the impetus of the PPS incentive structure will be monitored and assessed over the next few years, in order to determine the extent to which the PPS elicits the desired increase in efficiency--and in order to determine the extent to which it results in undesirable effects, such as decreases in beneficiaries' access to care or the quality of health care, or medically unjustified increases in the volume of admissions or the Case-Mix Index.

#### **A Conceptual Model for the Evaluation of the PPS**

The issues involved in evaluating a program as revolutionary and far-reaching as the PPS are numerous and complex. In order to assess these issues in a logical and comprehensive manner, a conceptual model has been developed to guide the evaluation of the PPS program. This conceptual model is represented in Figure 1.1 as the PPS Study Issue Matrix, which presents various measures of the implementation and impact of the PPS, according to the participant groups within the health care sector who are expected to be affected. This Matrix thus provides a framework for our evaluation of the PPS over the next several years.

The implementation and impact measures to be assessed are derived from three sources: the objectives stated by the designers of the program (see the

Figure 1.1  
Prospective Payment System (PPS) Study Issue Matrix

Impact Measures	Program Implementation	Expected Impact on Providers, Payers, and Beneficiaries				Cost Control	
Program Status:		Hospitals	Medicare Beneficiaries	Other Providers of Health Care	Other Payers for Inpatient Hospital Services	Hospital Expenditures	Total Program Expenditures
<b>Economic Impact:</b>							
▪ <b>Anticipated Benefits—</b>	Development of the PPS Proportion of hospitals covered by prospective payment Proportion of payments made under the PPS Admission patient monitoring Discharge patient monitoring Payment rate controls and adjustments	Hospital	Medicare Beneficiaries	Other Providers of Health Care	Other Payers for Inpatient Hospital Services	Hospital Expenditures	Total Program Expenditures
▪ <b>Unintended Consequences—</b>	<p><b>Shorter hospital stays:</b> Fewer unnecessary test and services Specialization—economics of acute Admission patient monitoring Incentives for hospital management Incentives for hospital management Reduction of excess hospital costs Reduction of excess hospital capacity Vertical integration of health care services</p> <p><b>Increases in inpatient admissions readmission rates:</b> Increased in hospital case mix due to changes in hospital admissions Decreased in hospital admissions Separate provider of services which previously have been provided by the hospital Care—“undressing” of acute care Home care—“undressing” of acute care Higher expenditures on “pass-through” cost components (e.g., drugs, medical supplies, education, training, acquisition, equipment, capital costs)</p>	<p>Part A liability limited to legal deductible and insurance</p> <p>Higher out-of-pocket costs, if Part B utilization increases</p>	<p>Increased provision of health care services in in-hospital settings Increased liability of discharge from hospital to other providers of care Hospital acquisition of or contracting with other providers of care Increased liability of hospital to other providers of care Reduction in inpatient admissions due to reduction of continuum of patient care</p> <p>Provision of physicians to change their practice patterns Fewer specialist physician consultations Increased frequency of minor surgical procedures More severely ill patients discharged from in-hospital settings Obstacles to providing a continuum of patient care Increased liability of hospital to other providers of care Contracting problems, etc.</p>	<p>Rapid diffusion of prospective payment and other administrative payment system Contracting with other providers of care Reductions in health insurance premium</p> <p>Potential shifting of care burden to other payers for hospital services with resulting increases in health insurance premiums or reductions in health insurance coverage Increased in uncompensated care</p>	<p>Budget neutrality in the short run Slower rate of growth in expenditures for the long run More predictable outlays</p> <p>Increased growth in pass-through costs</p>	<p>Increased growth in expenditures for hospital services in the short run Slower rate of growth in hospital expenditures Increased growth in expenditures for non-hospital care In the short run, if providers for non-hospital care are not other than a hospital, acute care expenditures</p>	
<b>Impact on Quality of Care:</b>							
▪ <b>Anticipated Benefits—</b>	Specialization—increases in efficiency and proficiency Fewer unnecessary tests and services More selective use of new technology	Shorter hospital stays Lower rates of nosocomial infection Fewer in-hospital complications and deaths Fewer admissions to the hospital Reductions in emergency care	More efficient management of patient care More efficient use of hospital personnel	Better coordination of health care treatment, payment, and coverage	More efficient provision of hospital care	More efficient provision of overall health care	
▪ <b>Unintended Consequences—</b>	Decreases in inpatient admissions Tendency toward premature discharges Decreases in in-hospital setting and other alternative settings Reference to older quality enhancing (but as generic in the short run) technology	Tendency toward premature discharges Decreases in in-hospital tests and services Decreases in in-hospital admissions Decreases in in-hospital consultations	Fewer in-hospital physician consultations More severely ill patients discharged from hospital to other providers of care	Compromised awareness to health care providers depending on the type of coverage	Replacement of quality with financial cost savings as the objective of hospitals	Replacement of quality with financial cost savings as the objective of health care providers	
<b>Impact on Access to Care:</b>							
▪ <b>Anticipated Benefits—</b>	Expansion of more services on a regional level Shift in services to more appropriate (and less expensive) settings	Decrease in overall cost of services provided Shift in treatment to more appropriate settings Regional availability of broad range of services	Increased availability of services in non-hospital settings	Reduced health care charges and insurance premiums Reduced provision of health care treatment payment and coverage Increased coordination on HMO's and PPO's	Reduction in the cost of hospital care Promotion of the success of efficient hospitals	Reduction in the total cost of health care services—either in the short run or the long run Promotion of efficiency in the management of health care providers	
▪ <b>Unintended Consequences—</b>	Decrease in high-cost cases Reduction of hospitals to accept cases in DRG's which are not profitable	Selective exclusion of high-cost case rates “Chipping” of uncompensable types of patients	Longer lengths of patients waiting for post-hospital care	Decrease in coverage for poor patients due to uncompensable care cost	Widespread hospital discharge (particularly in uninsured or poor areas)	Reduction in acceptance of Medicare patients	

December 1982 Report to Congress<sup>7</sup>); the policy goals reflected in the legislation which enacted the program (P.L. 98-21); and the system incentives contained in the program as implemented (see the discussion of incentives in Chapter 2). These measures are grouped as follows: program status, economic impact, impact on quality of care, and impact on access to care. The three impact measures was expressed in terms of both anticipated benefits and unintended (undesirable) consequences.

The health care groups represented in the Matrix are hospitals, beneficiaries, other (non-hospital) providers, and other payers. In addition, measures of progress in implementing the program are listed in the far left-hand column, and the two right-most columns (labeled "cost/control") depict measures of the impact of the program on "bottom line" considerations--the control of Medicare hospital costs and the preservation of the Medicare Trust Funds.

Each entry in the PPS Study Issue Matrix corresponds to a hypothesis to be studied in the evaluation of the PPS. While this matrix is not intended to--and, indeed, cannot hope to--reflect all possible consequences of the program, it does highlight the more important issues to be examined, lending a focus to the study and its interpretation that might not otherwise be obtainable. The underpinnings of this conceptual framework, and the generation of study hypotheses, are discussed in more detail in Chapter 3.

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<sup>7</sup> Ibid.

Based on the framework provided by the PPS Study Issues Matrix, then, this report describes the progress of PPS implementation during its first year. In addition, preliminary data are presented which describe the performance of the health care sector during the initial stages of PPS implementation, in the context of:

- The ability of the PPS to change the incentive structure in the hospital industry;
- The occurrence of both intended and unintended effects; and
- The identification of potential design shortcomings and necessary system improvements.

The analytic methods used in this report are necessarily constrained by the data available at this time. For the most part, the report is limited to the presentation of descriptive statistics based on administrative records maintained by the Health Care Financing Administration (HCFA). These statistics can be most useful in describing the implementation of the PPS, since HCFA's current reporting system allows for the relatively prompt availability of data on the number of hospitals under the PPS and aggregate dollar flows. The utility of the available data in assessing the impact of the PPS is somewhat more tenuous, however.

Since the PPS is a health policy initiative of national scope, the attribution of observed changes in hospital behavior solely to the PPS must be carefully considered. No control groups, for example, are available to indicate the degree to which observed changes may have been caused by other contemporaneous factors, such as increasing numbers of physicians or the emergence of competitive

treatment settings (e.g., walk-in emergency treatment centers or free-standing surgical facilities). An attempt is made to compare the behavior of hospitals before and after they came under the PPS, but the lack of a true control group remains a problem to be considered in this and future issues of the annual report.

The function of this first annual report, then, is primarily descriptive, rather than attributive--but the availability of early information on changes occurring in the health care system as the PPS is implemented may be of great use to policy-makers, even if the precise causes of these changes cannot be immediately discerned.

Future issues of the annual report will continue to focus on the impact of the PPS on hospitals, Medicare beneficiaries, other payers for inpatient services, and other providers of health care, as the new payment system develops over time. Several additional topics specified in P.L. 98-21 will also be addressed, such as the impact of computing DRG prospective payment rates by census division, rather than exclusively on a national basis. The analyses to be conducted in these upcoming reports should benefit from the continued development of HCFA administrative data bases and the acquisition of additional data from special surveys and other sources.

#### **Key Findings**

Each hospital covered by the PPS entered the system at the start of its first fiscal year on or after October 1, 1983. October 1984, then, was the first full month in which all Medicare hospitals (except for certain excepted types of

hospitals and hospitals in States with waivers from the system) were paid according to the new rules.

The findings to date are highly suggestive that, as the PPS is implemented, dramatic changes are occurring in the behavior of the Nation's hospitals, and that some of these changes are occurring far more rapidly than either supporters or detractors of the system had thought possible. Some of the key findings of this report are summarized below. A complete discussion of the findings for the first year is contained in Chapters 5 through 10.

### **Program Implementation**

- A total of 5,405 hospitals--81 percent of all Medicare-certified hospitals in the United States--were operating under the PPS by the end of September 1984. This represents virtually 100 percent of all hospitals subject to coverage under the new payment system.
- As of September 1984, the following hospitals were exempted from payment under the PPS:

--short-stay hospitals in waiver States	552
--psychiatric hospitals:	439
--rehabilitation hospitals:	49
--alcohol/drug hospitals:	25
--long-term care hospitals:	83
--children's hospitals:	<u>47</u>
--TOTAL	1,195

- The following units were exempted from payment under the PPS as of September 1984:

--psychiatric units:	722
--rehabilitation units:	308
--alcohol/drug units:	216
- Contracts establishing the 54 Peer Review Organizations (one for each State, the District of Columbia, Guam/American Samoa, Puerto Rico, and the Virgin Islands) had been signed by the legislatively-mandated deadline of November 15, 1984.
- Over 1.1 million PPS admissions had been reviewed by a PRO or other medical review entity through September 1984. Of the admissions reviewed, 2.5 percent were denied, indicating a more aggressive approach to utilization and quality review than prevailed prior to the PPS.

### **Impact on Hospitals**

- Projected figures for FY 1984 show a decrease of 1.7 percent in Medicare short-stay hospital admissions, contrary to the increase in admissions that was anticipated when the PPS was enacted. This translates to a decrease of 3.5 percent in admissions per thousand Medicare HI enrollees.
- Projected length of stay for all Medicare patients at short-stay hospitals in FY 1984 was 9.0 percent lower than in FY 1983. This represents the largest annual decline in the history of the Medicare program, and is significantly greater than would have been predicted from the historical trend.

### **Impact on Medicare Beneficiaries**

- Empirical evidence on the impact of the PPS on Medicare beneficiaries is not yet available. Discussion in this report was restricted to the analysis and description of baseline (pre-PPS) data, mostly from 1981.
- Data from the pre-PPS period indicate that discharge rates have been steadily increasing, and lengths of stay steadily decreasing, for aged, disabled, and ESRD beneficiaries.
- Studies have shown a strong negative relationship between the mortality rate associated with individual surgical procedures at specific hospitals and the frequency with which they are performed at the hospital. Data for the pre-PPS period show that different procedures performed on Medicare patients had different probabilities of being performed at high-volume hospitals.

### **Impact on Non-Hospital Providers**

- There are signs of increased post-hospital activity--the projected increase in skilled nursing facility (SNF) admission notices is 5.7 percent for FY 1984, compared to annual increases of 4.7 percent in FY 1982 and FY 1983.

### **Impact on Other Payers**

- No evidence is available thus far that providers have shifted costs to other payers under the PPS.

### **Impact on Medicare Program Expenditures**

- The PPS appears to have slowed the increase in Medicare inpatient hospital

payments. The estimated rate of growth for inpatient hospital payments in FY 1984 was 8.2 percent, compared to an annual rate of 19.9 percent between FY 1973 and FY 1982. The real rate of growth<sup>8</sup> was 3.8 percent in FY 1984, compared with 10.0 percent between FY 1973 and FY 1982.

- The growth rate of Medicare outpatient hospital payments does not appear to have increased as expected. For FY 1984, outpatient hospital payments grew by an estimated 11.9 percent (7.3 percent in real terms), compared with an annual rate of increase of 36.7 percent (25.5 percent in real terms) for the period between FY 1973 and FY 1982.
- Medicare physician payments continue to grow, although not as rapidly as before. The estimated rate of increase for physician services payments was 10.7 percent (6.2 percent in real terms) in FY 1984, compared with an annual rate of 18.8 percent (8.9 percent in real terms) between FY 1973 and FY 1982.
- Medicare skilled nursing payments represent a shrinking share of overall Medicare benefit payments--accounting for less than 1 percent of estimated payments for FY 1984, compared to over 2 percent in the early 1970's.
- The share of Medicare home health payments has almost tripled in the past 11 years--from 1.1 to 3.1 percent of estimated Medicare benefit payments. In FY 1984, the increase in Medicare payments for home health was over 20 percent for the fourth consecutive year.

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<sup>8</sup> The real rate of growth is the rate of growth computed after actual dollar amounts have been adjusted for the general rate of inflation, as represented by the annual Consumer Price Index compiled by the Bureau of Labor Statistics, U.S. Department of Labor.

- The growth rate of total Medicare benefit payments appears to be decreasing, apparently due in large part to the lower rate of growth of inpatient hospital payments--the estimated growth of total Medicare benefit payments was 9.6 percent in FY 1984 (5.2 percent in real terms), compared to an average annual growth rate of 20.7 percent (10.7 percent in real terms) between FY 1973 and FY 1982.

These findings indicate that changes are indeed taking place in the health care system, and that these changes reflect the new environment in which patients, providers, and third-party payers now function. The major purpose of this series of annual reports is to monitor and measure these changes as they take place, and to analyze the role of the PPS--as one of the several public and private policies which define the new health care environment--in causing or enhancing these changes.

Due to the apparently smooth implementation of the PPS thus far, and to the preliminary nature of the findings reported here, no legislative recommendations are made in this report.

#### Report Organization

This report is organized into three major parts:

- Part I: Background;
- Part II: Findings; and
- Part III: Summary and Conclusions.

These parts describe the background and content of the PPS, early data on its implementation and impact, and ongoing and contemplated research on the impact of the program.

Part I consists of four chapters. Following the introduction to the report in Chapter 1, a description of the background, rationale, and development of Medicare prospective payment is contained in Chapter 2. Chapter 2 also provides an overview of how the PPS works, and a discussion of the PPS incentive structure. Chapter 3 describes an approach to the analysis of the impact of the PPS, and suggests several study hypotheses to be tested over the next 4 years. Data sources available for monitoring and evaluating the system are identified and described in Chapter 4.

Part II of the report presents data on the implementation of the PPS and on its impact on classes of hospitals, beneficiaries, other providers of health care, and other payers for inpatient hospital services. In addition, data on Medicare program expenditures are also presented. These data are evaluated in terms of the PPS Study Issue Matrix discussed earlier. The findings in this report are largely based on data from FY 1984 hospital bills received and processed by HCFA between October 1, 1983 and June 29, 1984. In addition, some aggregate data on Medicare expenditures are available, along with some "baseline" (pre-PPS) data on beneficiaries' access to care and other beneficiary-related issues.

Part III presents a summary of the activities resulting in this first annual report and a discussion of preliminary conclusions which may be derived from the data presented in Part II. In addition, an agenda is proposed for pursuing the analysis of these issues in forthcoming annual reports, and for examining the many issues which remain as yet unaddressed.

## Chapter 2

### THE MEDICARE HOSPITAL PROSPECTIVE PAYMENT SYSTEM

#### The Evolution of Medicare Hospital Reimbursement

The Social Security Amendments of 1965 (P.L. 89-97) created the Medicare program, providing comprehensive health care coverage for most Americans over the age of 65. This program provided both hospital insurance and supplementary medical insurance for the elderly, improving their ability to obtain adequate hospital and ambulatory care. The payment method for institutional providers that was adopted by the Medicare program was modeled after prevailing private insurance practices, involving retrospective cost-based reimbursement--that is, hospitals were reimbursed for any reasonable costs incurred in the provision of covered care to Medicare patients. With the implementation of the Medicare program, there was a sharp increase in the elderly's usage of health care services and, as a result, a rapid rise in program expenditures. Between 1965 and 1967, Federal health care expenditures more than doubled.

The Social Security Amendments of 1967 (P.L. 90-248) authorized the Department of Health, Education, and Welfare (now Health and Human Services) to study the impact of extending benefits under the Medicare program to certain medically-disadvantaged groups, such as the disabled and persons with end-stage renal disease (ESRD). In addition, the Department was authorized to develop and test alternatives to retrospective cost reimbursement, for the purpose of controlling the rapid increase in health care expenditures.

Between 1967 and 1971, Medicare hospital expenditures rose from \$2.66 billion to \$5.16 billion—an average annual rate of 18 percent, compared to a 5 percent annual rise for the same time period in the Consumer Price Index, which measures the economy's overall rate of inflation. Although it was due in large part to the increased access provided by the program, this increase in Medicare hospital expenditures prompted Federal and private researchers to focus on the development of alternative hospital payment mechanisms, which might be more effective in controlling costs while continuing to make health care available to an increasing beneficiary population. The Economic Stabilization Program, enacted in 1971 to temporarily suppress the overall rate of inflation, also temporarily slowed the rate of increase of hospital costs.

The Social Security Amendments of 1972 (P.L. 92-603) extended Medicare coverage to disabled workers and persons with ESRD, and permitted those persons aged 65 and over who were not otherwise eligible for Medicare hospital insurance to obtain this coverage by paying the full premium. At the same time, several utilization and quality control measures were mandated:

- Professional Standards Review Organizations (PSRO's) were formed, in an attempt to ensure high-quality care and to reduce unnecessary utilization of hospital services;
- Health maintenance organizations (HMOs) were included among Medicare-covered providers,<sup>1</sup> to take advantage of the reduced rate of hospital admissions demonstrated by these group practice pre-payment plans; and

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<sup>1</sup> Under this law, each HMO was to be reimbursed based on a comparison of its costs with the average cost of providing services to Medicare beneficiaries in the same geographic area with the same characteristics as the HMO population. Under the Tax Equity and Fiscal Responsibility Act of 1982 (see below), prospective payment under risk sharing contracts with HMO's was authorized.

- Section 223 of the legislation authorized the Department to determine prospective per-diem reasonable cost limits by hospital group (later defined as depending on size and location), and to withhold payments to hospitals for unreasonable expenses.

In addition, the 1972 Amendments mandated the expansion of research and experimentation for improving access to health care services and controlling costs.

When the temporary Economic Stabilization Program was terminated, hospital inpatient costs began rising rapidly once again. In response to this continued inflation of hospital costs, the National Health Planning and Resources Act of 1974 (P.L. 93-641) was enacted. This legislation authorized the establishment of community health planning agencies, required hospitals to obtain a certificate of need (CON) for each capital project, and permitted the Department to set limits on hospital charges and routine costs.

Between 1974 and 1977, Federal health care expenditures rose by more than 50 percent, to a level four times as high as it was in 1967. Research and experimentation on cost-containment strategies intensified—State rate-setting programs were proving more effective than cost-based reimbursement, while broader Federal regulations, such as PSRO's and CON's, appeared to have little impact on costs. In 1977, Federal health care financing programs were consolidated under the newly-created Health Care Financing Administration (HCFA), which was made responsible for administering the Medicare and Medicaid programs and ensuring their quality and effectiveness.

In 1978, a system of voluntary cost-control efforts by the hospital sector reduced the rate of increase in hospital expenditures; however, these controls proved to be only temporarily effective. By 1980, Medicare hospital expenditures were rising even faster than they had been rising before--and, as the proportion of elderly in the population continued to increase, the insolvency of the Medicare Hospital Insurance Trust Fund was forecasted by the end of the decade.

In response to these concerns, the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA, P.L. 97-248) set limits on Medicare reimbursement for hospital operating costs (including ancillary costs) at the per-case level, adjusted for each individual hospital's case-mix. This legislation, for the first time, explicitly included ancillary costs, and shifted the emphasis in Medicare cost-containment from per-diem costs to per-case costs. TEFRA also placed a limit on the annual rate of increase of Medicare-reimbursable costs per discharge, and provided an incentive payment to hospitals operating below those limits. In addition, TEFRA required that the Department develop, in consultation with the Senate Committee on Finance and the House Committee on Ways and Means, a legislative proposal for Medicare payment to hospitals, skilled nursing facilities, and--to the extent feasible--other providers, on a prospective basis.

This brief sketch of Medicare hospital reimbursement indicates that, from very early on, it was apparent that cost control was one of the Medicare program's major shortcomings. Although some increase in Federal health care expenditures could be anticipated as a result of the increased access to care provided by Medicare and Medicaid, the actual rate of increase far exceeded acceptable levels. The evolution of Medicare hospital reimbursement largely represents a series of attempts to correct for these initial design flaws. However, from early attempts,

which focused on regulatory cost control devices, through the emergence of the 1972 Section 223 limits and the 1982 TEFRA case-mix limits, Medicare cost control strategy continued to be based on retrospective cost reimbursement principles.

The development of the PPS was predicated on the notion that the existing reimbursement principles could not be modified to a sufficient degree to effectively control costs, and that a fundamental change had to be made in the way that Medicare paid for hospital services. The next section describes in some detail how the new system was structured in response to this need to make a fundamental break with the historic principles of hospital reimbursement under Medicare.

#### **The Rationale for Prospective Payment**

#### **Dissatisfaction with Cost-Based Reimbursement**

As described above, Medicare payments for hospital care were determined under a retrospective cost-based reimbursement system from the program's initial implementation in 1966 until 1982. Thus, the Medicare payment system provided no incentive for hospitals to operate more efficiently. In fact, cost-based reimbursement encouraged just the opposite behavior, since higher hospital costs meant larger Medicare payments. It is not surprising, then, that Medicare hospital expenditures increased dramatically under cost-based reimbursement--during FY 1982, Medicare paid over \$30 billion for hospital care, compared with slightly over \$3 billion during FY 1967. While much of this increase may have been due to the above-mentioned increase in access to health care services, as well as a growing beneficiary population, advances in health care technology, and other

factors that were either desirable or uncontrollable from the program's point of view, a large portion of the growth in Medicare hospital expenditures under cost-based reimbursement might reasonably be linked to the lack of incentive for cost control and efficiency.

This situation had serious implications for both the Medicare program and the Federal Government. The Medicare Hospital Insurance Trust Fund, supported by payments from the current work force, would require ever increasing contributions in order to stay solvent in the face of rapidly increasing expenditures and an aging population. Over time, the fiscal problem facing Medicare promised to grow worse, as the ratio of workers to beneficiaries decreased and the gap between Medicare outlays and Medicare contributions became larger. These considerations led to the predictions of impending insolvency for the Hospital Insurance Trust Fund.

Such a financial crisis for the Medicare program would have major ramifications for the overall Federal health care budget--for example, the increase in Medicare hospital expenditures in 1982 was nearly as large as the total budget of the National Institutes for Health. Moreover, from the perspective of the entire Federal budget, the Medicare Hospital Insurance program is the second largest domestic program--only the Social Security program is larger. This fact, coupled with the fact that both Social Security and Medicare serve the increasing needs of

an aging population, clearly has serious long-run implications for the Federal Government's fiscal integrity. The opportunity costs involved are apparent--dollars invested in health care cannot be used to meet other budgetary needs.

As mentioned earlier, dissatisfaction with retrospective cost-based reimbursement was evidenced very early in the history of the Medicare program, as the Social Security Amendments of 1967 authorized the Department to develop and test alternatives to this payment system. Beginning in 1972, several demonstrations had been funded for the purpose of evaluating a wide variety of alternative payment systems. These demonstrations indicated that mandatory prospective payment-type systems were generally effective in holding down the rate of increase of hospital costs. Ten years of experience with these demonstrations, and extensive research on the reform of the Medicare hospital payment system, indicated that prospective payment was a viable alternative to the retrospective cost-based reimbursement system then in effect.

#### **Prospective Payment as a Solution to the Problem**

Prospective payment provides hospitals with an explicit set of payment rates per unit of payment. From the perspective of the Medicare program, these payment rates have four essential characteristics:

- First, they are determined in advance and fixed for the fiscal period to which they apply;

- Second, the payment rates for any individual hospital are not automatically determined by the level or pattern of its present or past incurred costs or charges;
- Third, these payment rates constitute payment in full for the specific unit of service; and
- Fourth, each hospital keeps the difference between the payment rate and its cost for that unit of care.

Each hospital is also at risk for any costs incurred over and above the prospective rate, thus generating a strong financial incentive for hospitals to control their input costs and resource use.

It should be noted that prospective payment creates direct financial incentives for hospitals only. It directly affects the behavior of neither physicians nor patients. Therefore, it can be most effective in attacking those sources of expenditure growth that are controllable by hospitals. Prospective payment may thus encourage efficient adjustment to influences such as an increase in the price of supplies, but it cannot in and of itself prevent their occurrence, since they are beyond the control of the individual hospital.

The burden of responding to the incentives created by prospective payment falls primarily on the hospital administrator. Administrators can respond fairly readily to incentives to control unit service costs (for laboratory tests, meals, etc.), because they have direct influence on the decisions that affect the availability of specific hospital services and the methods and resources used in their production. Thus, the incentive for efficiency can lead directly to the

realization of economies in the purchase and provision of goods and services related to hospital care, the reorganization and streamlining of hospital staffing patterns, and other organizational improvements.

Control over the admitting or service utilization behavior of the hospital's medical staff is not direct, however, because the decision to admit an individual patient, and any decisions regarding the services provided during the inpatient stay, are made by the attending physician. Therefore, the ability of the hospital to respond to prospective payment incentives depends to a great extent on the ability of the hospital administrator to transmit these incentives to the attending physician staff. Since the physician staff generally is not integrated into the administrative hierarchy of the hospital, the administrator must exercise his or her influence indirectly, through the organization of the medical staff and the organization and management of the hospital's clinical departments (adult medicine, cardiology, etc.), to establish a partnership for efficiency in the hospital.

Prospective payment provides a potential solution to the problem of increasing hospital expenditures that threatens the solvency of the Medicare program. The success or failure of prospective payment will be determined by its ability to effect a suitable change in the behavior of those who manage the Nation's hospitals. The specific characteristics of the prospective payment system that is implemented determine the types of incentives provided and, consequently, the types of behavior that are elicited by the system. These characteristics, such as the choice of a unit of payment and of a method for grouping these units so that they may be assigned the appropriate prospective prices, thus play a major role not only in the overall performance of the system, but also in the set of specific

effects (both intended and unintended) which are observed. The following section discusses the objectives which were considered in the design of the prospective payment system and some of the design parameters that define the system currently in effect.

### **The Development of a Hospital Prospective Payment System for Medicare**

#### **Objectives**

Prospective payment was intended to create financial incentives that encourage hospitals to restrain the use of resources while providing high-quality inpatient care. Therefore, the two most important general criteria in evaluating the prospective payment system are its effect on hospital costs and its effect on the quality of health care. The Department, at the outset, established several additional goals for the reform of the Medicare payment mechanism, reflecting 16 years of experience with cost-based reimbursement and 10 years of extensive experimentation with various payment alternatives. The overall goals of the system were as follows:

- It should continue to ensure beneficiary access to quality health care;
- It should be capable of being implemented quickly;
- It should be easy to administer;
- It should ensure predictability of government outlays;
- It should establish the Federal government as a prudent buyer of services;
- It should help hospitals attain predictability of their Medicare revenues;
- It should reduce the hospital cost reporting burden; and

- It should provide incentives for hospital management flexibility, innovation, planning, and control.

#### **Unit of Payment**

In designing the new prospective payment system, it was necessary to specify several parameters which would determine how the system functions, in light of the system objectives stated by the Department. The most basic choice involved the specification of a unit of payment to be incorporated in the new system.

The choice of the unit of payment is important because, while prospective payment encourages efficiency in the production of each unit upon which payment is based, it also encourages the production of more of those units if they are profitable. For instance, setting rates per unit of service encourages the efficient provision of each X-ray or laboratory test, but also creates incentives to provide more X-rays or laboratory tests to each patient, as long as the payment per unit exceeds the cost of the specific service. Similarly, per diem payment encourages hospitals to control the provision of services per day, but not length of stay or the number of admissions.

The payment of a single flat rate per discharge would have the advantage of establishing the Government as a prudent buyer of hospital services, by purchasing a total product per discharge rather than a series of component parts. From the hospital's point of view, this approach would have the advantage that the Government would not need to base payment on its evaluation of specific service attributes, such as appropriate lengths of stay or optimal mixes of ancillary services.

This approach, however, has one serious drawback: it does not explicitly recognize the different types of cases treated by specific hospitals. The need for explicit recognition of hospital case-mix is one of the clear lessons to be learned from the years of Department-sponsored experiments with alternative payment systems. If case-mix were not explicitly recognized, the hospital would receive the same payment regardless of the patient's degree of illness or resource requirements. Thus, under a flat payment per discharge, the hospital would have a powerful incentive to treat patients who are less ill. This incentive has serious implications for the access of Medicare beneficiaries to quality health care.

Medicare hospital payments under the PPS are made by case type, explicitly recognizing the individual hospital's current case-mix. Under this method, the payment rate for each case depends on the particular category to which it is assigned. These categories, called diagnosis-related groups, are designed to reflect the variation in hospital resource requirements involved in treating different types of cases.

#### **Diagnosis-Related Groups**

The purpose of diagnosis-related groups (DRG's) is to classify patients into groups that are clinically coherent and homogeneous with respect to resource use. Such a classification scheme allows for equitable payment across hospitals, in that comparable services can be comparably reimbursed. In addition, hospital administrators can use this method to review the pattern of utilization within their facilities.

As the DRG methodology developed, it was determined that, to be useful to Medicare, DRG's should have the following characteristics:

- They should be medically interpretable;
- They should be defined on variables that are commonly available from hospital record abstracts and can be incorporated into Medicare administrative records;
- The number of case types should be limited to a manageable number; and
- They should be defined to distinguish patients who require different types and quantities of hospital resources.

Medical interpretability was necessary to ensure that DRG's would be more than just a set of statistical artifacts, and to facilitate their use by physicians and hospital administrators in managing the delivery of inpatient care. Restricting the variables used in defining DRG's to those which are commonly available was necessary to ensure their widespread applicability and quick implementation, especially with regard to the Medicare payment system. The limitation on the number of categories was to insure that there would be enough cases in each group for meaningful comparative analysis, and to preserve the usefulness of DRG's from an administrative standpoint. Similarity regarding resource requirements was necessary for the equitable application of DRG's in a reimbursement context.

The first step in formulating the currently used DRG's was the assignment by a physician panel of all possible diagnoses listed in the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) into 23 mutually exclusive headings, known as Major Diagnostic Categories (MDC's). The diagnoses

in each MDC correspond to a single organ system, just as medical specialties and clinical care, in general, are organized.

Each MDC was then evaluated to identify additional characteristics which would have a consistent effect on the consumption of hospital resources. The presence of a surgical procedure requiring the use of the operating room was the criterion for the first split in the MDC's; then, surgical and medical groups were sub-divided according to principal surgery and diagnosis, respectively. Further splits were based on the presence of specific complicating or co-morbid conditions, patient age, and discharge status.

At no stage in the process was a potential split adopted unless a national data base showed that it was important in explaining resource use (as measured by length of stay) and the physician advisory panel determined that it was clinically sensible. The result of this process was the delineation of 468 DRG's which encompass all patients treated in an inpatient setting; in addition, two additional classes were created, which contain cases that, due to coding errors or other anomalies, could not be classified into any of the other DRG's.

The DRG system thus has the following attributes:

- It has been subject to extensive review by physicians throughout its development;
- It allows for the easy classification of inpatient records by an efficient computer program, using widely available discharge abstract data;

- Its category definitions cover virtually the entire inpatient population in 467 case types;
- It conforms to the actual delivery of inpatient care; and
- It groups cases together according to similarity in hospital resource use.

These attributes establish DRG's as a useful framework for representing the mix of cases treated by each hospital. This framework, in turn, can be used to determine the amount of hospital resources typically required to treat cases of each type, and--in the Medicare context--to prospectively fix the payment to be received by the hospital. In this way, DRG's provide the basis for a hospital payment system that meets the requirements established by the Department, and that explicitly accounts for hospital case-mix.

The degree to which DRG's serve their desired function will, of course, become more evident over time. Critics argue that DRG's may not be sufficiently sensitive to the variation in resource use required to manage different case types. From a payment perspective, this is a critically important issue. DRG's, as a proxy for case-mix, are intended to ensure that hospitals will be paid like amounts for the care of like cases under the PPS. If such is not the case, payment across hospitals may not be perceived as being equitable--and a payment system that is perceived as inequitable may distort incentives so that access and quality are adversely affected.

Accordingly, the study of hospital payment under a DRG-based system, and the recommendation of necessary modifications to that system, is a principal focus of this series of reports to the Congress.

## PPS Design Features

Under the PPS, payment to most hospitals for Medicare Part A inpatient operating costs is made on the basis of prospectively determined rates per discharge, according to each discharge's classification into one of the 468 DRG's. This prospective payment is to be considered payment in full for the operating costs generated by the case, and hospitals are prohibited from charging beneficiaries more than the statutory deductible and coinsurance amounts.

For purposes of the PPS, "inpatient operating costs" include routine services (room, dietary, and nursing), ancillary services, and intensive care. Capital and direct medical education costs, and kidney acquisition costs incurred by approved renal transplantation centers, as well as outpatient costs and Part B inpatient costs, continue--for the time being--to be reimbursed on a retrospective basis.

The PPS replaces the retrospective cost-based reimbursement system previously in effect, and supersedes the cost-per-case limits and rate of increase ceiling provisions contained in TEFRA. However, payments under the PPS are structured to be "budget-neutral" with respect to TEFRA through FY 1985--that is, payments for inpatient operating costs for the first 2 years of PPS implementation are to be no more and no less than those projected under TEFRA provisions.

## Implementation and Phase-In

The PPS applies to all hospitals participating in the Medicare program, except those hospitals or units specifically excluded (see below), beginning with each hospital's first cost reporting period starting on or after October 1, 1983.

In order to facilitate the transition to the PPS, the system is to be implemented over a 3-year phase-in period, during which a declining portion of the total prospective payment rate for each hospital is to be based on the hospital's own historical level of costs. This hospital-specific rate is to be combined with a Federal rate which, in turn, is a combination of the appropriate regional and national rates per discharge. These rates, which are discussed in more detail below, are to be combined according to the following schedule:

<u>Period Beginning On or After</u>	<u>Hospital-Specific Portion</u>	<u>Federal Portion</u>	<u>Regional/National Split</u>
October 1, 1983	75%	25%	(100% regional; 0% national)
October 1, 1984	50%	50%	(75% regional; 25% national)
October 1, 1985	25%	75%	(50% regional; 50% national)
October 1, 1986	0%	100%	(0% regional; 100% national)

While the hospital-specific/Federal blend is determined by the individual hospital's cost reporting period, the blend of regional and national rates is determined by the Federal fiscal year. For instance, a hospital with a cost reporting period beginning

on January 1 would be subject to the following rate combinations:

<u>Time Period</u>	<u>Hospital-Specific</u>	<u>Federal</u>	<u>(Regional/National)</u>
Oct. 1983-Dec. 1983	-not subject to prospective payment-		
Jan. 1984-Sept. 1984	75%	25%	(25%/0%)
Oct. 1984-Dec. 1984	75%	25%	(18.75%/6.25%)
Jan. 1985-Sept. 1985	50%	50%	(37.5%/12.5%)
Oct. 1985-Dec. 1985	50%	50%	(25%/25%)
Jan. 1986-Sept. 1986	25%	75%	(37.5%/37.5%)
Oct. 1986-Dec. 1986	25%	75%	(0%/75%)
Jan. 1987 onward	0%	100%	(0%/100%)

There are 18 different sets of regional rates, corresponding to urban and rural areas in each of the 9 census regions, and 2 sets of national rates, 1 each for urban and rural hospitals. Beginning with the fourth year of PPS implementation, Medicare payment for inpatient operating costs is to be fully determined by the urban or rural national rate per discharge.

### **Exclusions and Special Considerations**

Psychiatric, rehabilitation, children's, and long-term care hospitals are excluded from the PPS, as are hospitals located outside of the 50 States and the District of Columbia.<sup>2</sup> Distinct-part psychiatric and rehabilitation units of acute care hospitals are also excluded from the PPS. An appropriate prospective payment mechanism has not yet been devised for cases treated by these hospitals and units, and they continue (for the time being) to be reimbursed on a retrospective cost basis. A special limited time exclusion, to expire on October 1, 1985, has been provided for alcohol/drug treatment hospitals and units, while the PPS is refined to allow for their appropriate payment.

Hospitals paid under authorized State cost control systems are also excluded from the PPS--currently, Maryland, Massachusetts, New Jersey, and New York have such authorized programs.<sup>3</sup> In addition, there are two area-wide waiver programs in effect, including nine hospitals in the Rochester, New York area, and eight hospitals in the rural Finger Lakes region of New York State, respectively.

Hospitals which, by reason of factors such as isolated location, weather or travel conditions, or the absence of other hospitals, are the sole source of inpatient hospital services available to Medicare beneficiaries in a geographic area, may be designated by the Secretary of Health and Human Services as sole community

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<sup>2</sup> Recommendations by the Department on this issue are contained in a report to be submitted to the Congress.

<sup>3</sup> Section 1886(c) of the Social Security Act provides a means for the transfer of these State cost control systems from demonstration authority to program waiver status. The New Jersey system has already been transferred under this authority.

hospitals. These hospitals are to be paid indefinitely at a rate equal to 75 percent of the hospital-specific rate plus 25 percent of the regional portion of the applicable Federal rate. During the PPS transition period, each such hospital may also receive an additional compensating payment, if, due to circumstances beyond its control, it has experienced more than a 5 percent decrease in inpatient cases.<sup>4</sup>

Other hospitals receiving special consideration under the PPS include Christian Science sanatoria (which are paid an amount based on their historical operating costs per discharge), hospitals that are primarily devoted to cancer treatment and research (which are given the opportunity, during their first cost reporting period under the PPS, to opt for reimbursement on a reasonable cost basis, subject to the TEFRA target rate ceiling), and regional referral centers (which are paid the applicable rates for urban hospitals in the same geographic region, except that the labor-related portion of the DRG rate is adjusted by the rural wage index<sup>5</sup> applicable to the hospital's location).

#### **Determination of the Prospective Payment Rates**

Prospective payment rates under the PPS are determined by three components:

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<sup>4</sup> Recommendations by the Department on this issue will be contained in a report to be submitted to the Congress.

<sup>5</sup> For a description of the role of the wage index in determining hospital payments, see below.

- A standardized payment amount, which represents the average operating cost for a typical Medicare inpatient stay, exclusive of case-mix, area wages, and teaching costs;
- A wage index, which represents the average wage level in each urban or rural area relative to the national average wage level across all areas; and
- A weighting factor for each DRG, which represents the relative costliness of a hospital discharge in that DRG compared to the typical Medicare discharge.

The standardized payment amount controls the overall level of the payment rates for all hospitals. It is currently based on hospital operating cost data for 1981, updated for inflation to the year in which payments are to be made, and is adjusted to account for differences in case-mix, wage levels, and teaching activity across hospitals. During the initial 3-year transition period, the standardized payment amounts are a blend of national, regional, and hospital-specific payment rates. As a result, three different sets of standardized payment amounts are calculated: (1) national urban and rural rates, which represent the average adjusted operating cost per discharge for all urban and all rural hospitals, respectively; (2) regional urban and rural rates, which represent the average adjusted operating cost per discharge for urban and rural hospitals in each of the nine census divisions (i.e., 18 separate rates); and (3) a hospital-specific rate, which is based on audited data reflecting each hospital's historical cost experience.

The wage index adjusts the labor-related portion of the national and regional standardized payment amounts to account for area differences in hospital wage levels. This adjustment is made by multiplying the labor-related portion of the adjusted standardized amount, which was estimated to be 79.15 percent of the total

amount, by a wage index for the area in which the hospital is located. The wage index value for each hospital is determined by the metropolitan statistical area (MSA) in which it is located, or by State, for hospitals not located in an MSA. The wage index currently in use was constructed by the Bureau of Labor Statistics (BLS), using 1981 quarterly tax reports submitted by hospitals to State employment security agencies (ES 202 reporting system). A new wage index is being developed, which is designed to alleviate some of the perceived inequities in the BLS wage index series.

The weighting factors adjust the level of the standardized payment amounts to reflect the relative resource consumption associated with each DRG. Each weight represents the relative cost, across all hospitals, of treating cases classified in that DRG. The current relative weights were developed using a sample of Medicare bills and Medicare Cost Reports from approximately 5,500 hospitals. The process of constructing the relative weights involved classifying approximately two million 1981 Medicare discharges into DRG's, computing an estimate of the cost for each case, adjusting the estimated cost for each case to account for differences in input factor prices and hospital teaching status, computing an average adjusted cost per DRG, and, finally, deriving a measure of the relative costliness of each DRG.

In general, then, the prospective payment rate for a Medicare discharge in a particular hospital would be calculated as follows:

PROSPECTIVE PAYMENT RATE = (STANDARDIZED PAYMENT AMOUNT, ADJUSTED BY THE WAGE INDEX FOR THE HOSPITAL'S AREA) X (WEIGHTING FACTOR FOR THE DRG)

## Additional Payment Amounts

In addition to the prospective payment rate per discharge, hospitals may receive other payments for Medicare inpatient services. These additional payments may either be in recognition of the existence of certain conditions beyond the scope of the PPS, or "pass-through" costs that cannot yet appropriately be paid via the PPS mechanism. Included in the former group are payments for "outlier" cases, Medicare bad debts, and indirect medical education costs. The latter group includes capital-related costs and direct medical education costs.

Outliers are atypical cases that either require an exceptionally long inpatient stay or generate extraordinarily high costs when compared to the overall distribution of cases in the same DRG. To qualify as a length of stay outlier (or "day outlier"), the beneficiary's stay (excluding days of stay that are not covered under Medicare Part A) must exceed the geometric mean length of stay for the DRG by the lesser of 20 days or 1.94 standard deviations.<sup>6</sup> For each day in excess of the outlier threshold, the additional outlier payment amount is equal to 60 percent of the average PPS standard per-diem cost for the applicable DRG, which is calculated by dividing the Federal portion of the PPS payment rate for the DRG by the corresponding geometric mean length of stay.<sup>7</sup>

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<sup>6</sup> For FY 1985, a discharge will be considered a day outlier if the number of days in the stay exceeds the mean length of stay for the DRG by the lesser of 22 days or 1.94 standard deviations.

<sup>7</sup> For discharges prior to February 2, 1984, the additional payment for outlier cases was applied to both the hospital-specific and the Federal portion of the PPS payment rate. This practice was discontinued because the costs of outlier cases are already reflected in each hospital's base period operating costs used to compute the hospital-specific portion of the blended PPS payment rate.

To qualify as cost outliers, cases must not qualify as day outliers. The hospital's charges for covered services furnished to the beneficiary, adjusted to cost, must exceed the greater of \$12,000 or 1.5 times the appropriate regional rate per discharge.<sup>8</sup> The additional payment amount for cost outliers is equal to 60 percent of the difference between the hospital's adjusted cost for the discharge and the threshold for cost outlier status. Again this additional amount is applied only to the Federal portion of the PPS payment rate.

Bad debts attributable to the deductible and coinsurance amounts owed by Medicare beneficiaries are also reimbursed under the PPS, just as they were prior to the implementation of the PPS.

In recognition of the tendencies of teaching hospitals to treat extraordinary cases, and of the extra costs involved in providing treatment within the context of graduate medical education, each hospital with an approved graduate medical education program receives, by law, an additional payment for indirect medical education costs. This additional payment is currently set at 11.59 percent of a base amount, for every .1 increment in the hospital's ratio of full-time equivalent residents per bed. The base amount for this payment is equal to the Federal portion of the Medicare payment rate, plus any outlier payments made to the hospital.

Capital-related costs are excluded from the definition of inpatient operating costs under the PPS, since there is currently no commonly-accepted method for

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<sup>8</sup> For FY 1985, a discharge that does not qualify as a day outlier will be considered a cost outlier if the cost of covered services exceeds the greater of \$13,000 or 2.0 times the Federal rate for the DRG.

reimbursing these costs on a per-case basis. Thus, capital-related costs continue to be reimbursed on a reasonable cost basis. However, the Department is currently studying methods for including payments for capital-related costs associated with inpatient hospital services under the prospective payment methodology.

Direct medical education costs include expenses for approved training programs for interns and residents, nursing students, and a variety of paramedical programs. Currently, these costs are also reimbursed on a reasonable cost basis.

Kidney acquisition costs incurred by certified renal transplant centers also continue to be reimbursed on a reasonable cost basis.

#### **Review Mechanism**

Each hospital under the PPS is required to have entered into an agreement with a Utilization and Quality Control Peer Review Organization (PRO). The function of the PRO program, which was established under the Peer Review Improvement Act of 1982 (Subtitle C of P.L. 97-248), is to provide for the review of:

- The validity of diagnostic and procedural information provided by the hospital;
- The completeness, adequacy, and quality of care;
- The appropriateness of admissions and discharges; and
- The appropriateness of care for which outlier payments are made.

Specifically, the components of the review mechanism are as follows:

- Admission review--PRO's review admissions to determine whether inpatient hospital care is medically necessary for treatment of the patient's condition, and may deny payment in the event of medically unnecessary admissions.
- Procedure review--operating room procedures are also reviewed and, where these procedures are determined not to be appropriate, the case may be reassigned to a non-surgical DRG.
- Admission pattern monitoring--admission patterns of providers are reviewed by HCFA to determine if admission levels or the number of short-stay cases have increased, and PRO's are alerted to providers with extraordinary patterns of admissions.
- Outlier review--all outlier cases (in FY 1984) are reviewed by the PRO, to determine whether the stay contains days which are not covered or medically unnecessary, and outlier payments may be denied as a result of this review.
- DRG validation--the PRO conducts a review of a sample of each hospital's discharges, to determine whether cases have been appropriately coded to allow their assignment to the proper DRG.
- Readmission and transfer review--all readmissions within seven days of discharge and all transfers between hospitals (in FY 1984) are reviewed by the PRO and, if it is determined that they were unnecessary or inappropriate, payment maybe denied on the second admission.

Thus, PRO's are established as safeguards of the medical necessity, appropriateness, and quality of care. All technical and medical coverage rules are applied to each case reviewed by the PRO, and this review may result in the

reclassification of a case from one DRG to another, or in total payment denial. In addition, review may result in the reduction or denial of outlier claims. The PRO may not, however, reduce the prospective payment for a particular DRG.

Other sanctions against the responsible hospital and/or physician may be taken if the PRO identifies substandard quality of care. In all such instances, review is extended to all discharges involving the hospital and/or physician. Upon notification by the PRO, the HCFA regional office may also initiate an investigation into whether the hospital is in compliance with the Medicare Conditions of Participation. Moreover, for hospitals that have a pattern of prohibited actions, the regional Office of the Inspector General may terminate the Medicare provider agreement.

A description of PRO admission and quality objectives and activities may be found in Chapter 5, and a discussion of additional initiatives for monitoring access and quality under the PPS is contained in Chapter 7.

#### **The PPS Incentive Structure**

As discussed above, hospital payment systems offer powerful behavioral incentives--both positive and negative--which affect all parties involved in the health care system. Such incentives have, historically, been aimed most directly at the hospital industry and, under the PPS, they will continue to be so. The PPS, however, is designed to alter the previous structure of these incentives and, accordingly, the resultant hospital behavior. As stated by the designers of the system: "When hospitals are paid in a different way, it is reasonable to expect that their behavior will change. Indeed, changing hospital behavior is the purpose

of this initiative.<sup>9</sup> With DRG payment divorced from the concepts of cost-based reimbursement, hospitals may be expected to shift their fundamental operating question from "How much can be provided?" to "What will anticipated hospital revenue support?" Hospitals will no longer be able to make decisions affecting the types and quantities of services provided without the prudent consideration of their costs.

While hospitals are the primary target of the PPS incentive structure, it is important to recognize that the new incentives will also affect other groups--such as Medicare beneficiaries, other providers of health care services, and other payers for inpatient hospital care --in significant ways. Consequently, it can be expected that each of these groups will respond with a range of both immediate and longer-term adjustments.

The remainder of this chapter briefly discusses some of these incentives and some of the behavioral responses which might reasonably be expected. The time frame in which these adjustments will occur is somewhat uncertain (see Dobson, 1984). However, as discussed in Part II of this report, preliminary data suggest that hospitals (and others) are moving very quickly to change the ways in which they manage themselves and interact with the rest of the health care system.

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<sup>9</sup> U.S. Department of Health and Human Services. Report to Congress: Hospital Prospective Payment for Medicare. December 1982, p. 101.

## Hospitals

Several areas of hospital behavior may be affected by the PPS, particularly in the short-term. These immediate adjustments can be grouped into four major types:

- Data building activities;
- Hospital administration;
- Hospital organization and structure; and
- Admissions and changes in volume.

The PPS is expected to serve as an impetus for developing new data bases that can be used as administrative planning tools, for controlling both production costs and the quantities of specific services being provided. Because the medical record has now become the hospital bill, diagnostic and financial data are being linked, and medical records staffs are being augmented and retrained to improve their abilities to follow proper coding procedures (Richards, May 1, 1984). Hospital data generating procedures are also likely to move toward greater automation, with the eventual goal of creating data bases for tracking both intermediate and final production costs (Benz, 1984). Complementary data systems are also being developed within fiscal intermediaries, and in HCFA as well (see Chapter 4), as a way of verifying the assignment of diagnostic codes and monitoring other aspects of hospital behavior.

With the development of more precise data systems, the content and use of management information reports will change, at least for Medicare hospitalizations, and probably for other patients as well. Resource use could be categorized by DRG. Data systems could make it easier to analyze cost center

expenditures, examine medical services provided by physicians, and compare the ratio of routine costs to length of stay (Sandrick, 1984). As experience with the PPS system increases, financial analyses could eventually reflect surpluses and losses by DRG category and may influence the offering of services by specific institutions. Likewise, regional data and cross-hospital comparisons could contribute to hospital specialization within geographic areas.

Hospital administration may also adapt to PPS incentives. The increased focus on medical records and the development of diagnostic and financial data systems was noted above. Other adjustments may include a wide range of activities. Multidisciplinary task forces, for example, are being formed across departments to review staff functions, reduce departmental costs, and find less expensive staff mixes (Kidder and Sullivan, 1982; Mistarz, 1984). Standing orders by physicians are being reviewed to eliminate automatic/routine tests that may not be essential to diagnoses. Some hospitals are also considering limitations or prior approval on tests ordered by resident physicians.

Individual services will probably be scrutinized to determine their relationship to DRG payment rates. Engineering studies could be conducted to determine least-cost production techniques, and to consider how existing energy, utility, and other systems can be made more efficient (Abt, 1984). The requirements of the Joint Commission on the Accreditation of Hospitals may very well be reexamined, and responses to these reviews, as well as to State licensing reviews, may be altered (Seymour, 1984). Hospitals are also likely to continue the trend toward the formation of purchasing groups, so that they may buy in bulk and shop for the lowest prices (Eli Lilly, 1982; Stolar, 1976).

Organizational changes within hospital corporate structures, through both horizontal and vertical integration, are expected to be among the short-term adjustments resulting from the PPS. For example, PPS incentives may lead to the increased consolidation of hospitals into chains and other forms of multi-institutional systems (horizontal integration), in an attempt to increase service volume and purchasing power, and to reduce administrative overhead (Modern Healthcare, April 1984). In addition, hospitals are likely to "market" other forms of care through acquisitions or contractual agreement (vertical integration) with home health agencies, skilled nursing facilities, clinics, etc. (Modern Healthcare, December 1983; Louden, 1984; Seermon, et al., 1984). Because services delivered in these types of facilities are not subject to the PPS, hospitals may find it profitable to reorganize in this manner. In the long run, then, it is likely that the hospital industry will become both more horizontally and vertically integrated, and that this trend may change the nature of health care service provision.

The PPS may also affect hospital admission practices. Under the PPS, the case is the unit of payment--as the number of cases increases, the payment to the hospital increases. Thus, one of the most widely-anticipated impacts of the PPS was that hospitals might attempt to increase their revenues by increasing the volume of admissions. To counter the potential for a dramatic increase in the volume of admissions, Medicare admissions have been closely monitored by the Department.<sup>10</sup> In addition, specific objectives related to the reduction of

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<sup>10</sup> Early returns indicate that Medicare admissions do not appear to be rising under the PPS, and in fact have fallen during FY 1984. This may be due to a strong overall trend toward decreased hospital admissions (see Chapter 6).

unnecessary and/or inappropriate admissions have been negotiated with each of the 54 PRO's.

In addition to short-term adjustments by hospitals in response to PPS incentives, any broad assessment of the impacts of the PPS must consider adjustments that may develop over a longer period of time. These longer range adjustments may include:

- Setting objectives for long-term cost-effectiveness;
- Moves toward competition;
- Capital investment strategies;
- Technological adjustments;
- Specialization; and
- Supply effects.

Under the PPS, hospitals have long-run incentives to provide cost-effective services. This may involve making new long-term commitments to the community, the reevaluation of traditional "product lines," or the possible consolidation of services to ensure future viability. One way to face long-run changes in case-mix could be through staffing and capital investment patterns. To some extent, in the short run, the hospital's physical plant and labor mix controls case-mix, but over a longer time period, changes in staff and equipment mixes will allow for modification of the services offered by the hospital. Hospitals may not only be doing things differently in the short run under the PPS--in the long run, they may be doing different things, as well.

The PPS is also likely to augment emerging competitive forces within the hospital industry, as hospitals attempt to maintain their volume through a variety of "defensive" competition strategies. Hospitals may feel that they have to compete for patients, especially those in profitable DRG categories, by offering their patients sets of amenities designed to distinguish them from other hospitals. Primary care networks, which serve as "gatekeepers" to other health care providers, seem likely to expand under the PPS, as hospitals compete for a limited flow of health care dollars.

Until October 1, 1986, allowable Medicare capital costs are reimbursed on a "pass-through" basis (see the discussion earlier in this chapter). At first glance, it may appear that expanding expenditures in "pass-through" categories (especially capital) would typically be advantageous to a hospital. However, capital expenditures create operating expenses which are subject to prospective payment. Thus, the incentive to increase capital expenditures is limited under the PPS. In addition, Congress has directed the Department to propose methods by which to include capital costs under the PPS. Once this is accomplished, the PPS incentive for cost efficiency will apply directly to almost all of the costs associated with hospital care.

The PPS provides broad incentives to hospitals for implementing cost-reducing technologies. Those that are cost-increasing, for the most part, will be much more highly scrutinized than before. Under the PPS, hospitals are thus likely to become more prudent buyers of new technology. This may involve strategy such as the sharing of expensive technologies among hospitals, and a general reluctance to buy

new equipment that is not cost-effective. The resulting downward shift in demand may put increased pressure on the producers of new devices to identify their uses, lower their prices, and ensure that they are efficiently designed and produced.

Under a "best case" scenario, the medical device industry would more closely mirror the computer or electronics industry--where innovation has led to less expensive and vastly more useful products. The dialysis industry, for example, which has faced a type of prospective payment system since 1973, has developed innovative technologies and improved its product. The dialysis industry may prove to be a harbinger for other devices--even products such as pacemakers--for which alterations to the current payment structure might spur quality-enhancing technologies that are less expensive, as well.

Specialization among hospitals is likely to occur as a long-range adjustment to PPS incentives. Many hospitals may find that they can no longer afford to offer the complete range of inpatient services to their patients, and may instead choose to offer fewer services more economically. Hospitals in a given area will have further incentive to work together, through arrangements such as referral center linkages across hospitals specializing in various types of care. Specialization should generally result in better patient care, because the hospitals that offer very technical procedures will be those most experienced in the practice of such procedures.

There may also be some overall supply effects that stem from the PPS. In a broad sense, the cost containment incentive of the PPS is aimed at increasing

hospital efficiency. However, some hospitals may experience fiscal problems due to the PPS. In areas where a community desires the continuation of a service that is losing money, for example, the hospital may have to re-evaluate its mission statement and/or financial structure (Seymour, 1984).

HCFA demonstration programs have indicated that prospective payment does not necessarily adversely affect hospital financial status to a significant degree (Coelen and Yaffee, 1984). The 3-year phase-in of the PPS should provide hospitals with time to reassess their financial management policies. In addition, adjustments have been made to the PPS to account for the anticipated special needs of several types of hospitals, such as teaching hospitals, sole community providers, and others. Additional payments are also made for outlier cases, to ensure that hospitals that regularly treat such exceptional cases are not excessively penalized.

### **Beneficiaries**

The primary criterion by which the performance of any social program must be judged is its ability to efficiently provide the intended benefits to the intended beneficiary group. The Medicare program was enacted to enable the elderly and certain other groups to acquire adequate medical care without economic hardship. The new hospital incentives created by the PPS must thus be carefully considered for their ultimate impact on Medicare program beneficiaries.

Quality of care is a most important concern. To the extent that payment under the DRG system might encourage some hospitals to release patients

prematurely, or to reduce the provision of important ancillary services in order to minimize costs, safeguards must be put in place to counteract these possible incentives. In fact, many of the incentives that have traditionally served to maintain quality in the past still remain. Physicians have long had established codes of professional ethics, and both physicians and hospitals could face malpractice suits if lower quality is reflected in treatment outcomes. In addition, PRO's are to further monitor the quality of health care delivered to Medicare beneficiaries.

Prospective payment demonstrations funded by HCFA (Coelen and Yaffe, 1984) indicate that prospective payment systems do not necessarily reduce quality. The PPS system may, however, result in a reduction of unnecessary care, which might otherwise have been rendered without the consistent cost-conscious review implemented under the PPS. Quality of care could, in fact, increase for certain highly technical procedures (such as open-heart surgery), as specialization encouraged by the PPS (see the discussion above) leads to the concentration of these procedures in those facilities which can generate enough volume to maintain a high level of efficiency (Riley and Lubitz, 1984; Berki, 1983).

The PRO program represents a major effort to maintain or improve the quality of care under the PPS. Each PRO has five quality objectives specifically designed to address quality problems which exist in its area. In addition, the overall evaluation of each PRO's performance during its contract will emphasize its impact on the quality of care. A description of several PRO objectives and activities may be found in Chapter 5. The quality of care will continue to be a focus of both short-run and long-run monitoring efforts under the PPS, as discussed in Chapter 7.

The PPS intensifies many existing ethical and legal questions regarding the provision of health care, and raises some new ones. Since the incentives provided by the PPS could lead hospitals to avoid admitting "unprofitable" patients, such as the oldest elderly or patients with end-stage renal disease, the following questions arise: Will these patients be turned away? If admitted, will they receive second-class treatment? Will there be rationing of expensive new technology to Medicare patients? Will life-prolonging efforts be prematurely terminated in an effort to save money? These are difficult questions to confront, but ones that must be addressed as the PPS evolves.

Although some of the incentives inherent in the system may encourage the inappropriate utilization of health services, there are still strong incentives for offering appropriate care. As discussed above, the health care professions have codes of ethics to govern such behavior. The threat of malpractice may also serve as a deterrent to illegal or unethical conduct. In many instances, too, it may not be possible to determine the severity of illness at the time of admission, making it difficult to screen out and turn away high cost patients. Nevertheless, the Department is particularly concerned about these legal and ethical issues and is closely monitoring these issues.

Another concern relevant to the impact of the PPS on Medicare beneficiaries is out-of-pocket costs. A large portion of the medical bill of beneficiaries is not paid by Medicare. Since PPS incentives may affect both treatment volume and

setting, it may have a large impact on these out-of-pocket costs. While the cost to beneficiaries of inpatient care is limited, the copayment for outpatient care is higher. Thus, a shift in treatment from inpatient to outpatient settings could result in a higher percentage of total cost being borne by beneficiaries. However, to the extent that this shift from inpatient to outpatient care helps beneficiaries avoid high inpatient deductible amounts, their overall out-of-pocket cost may decrease. This issue will be monitored carefully as the PPS is implemented.

#### Other Providers

Since Medicare is the largest single payer of hospital bills in the country, a change in reimbursement policy as basic as that represented by the PPS can be expected to have a profound effect on other providers as well. The two groups expected to be most directly affected are physicians and long-term care providers.

Physician behavior, most specifically the hospital-physician relationship, is expected to change as a result of PPS incentives, even though (as discussed earlier) the PPS has no direct effect on most physicians. Indeed, for primary care physicians, reduced hospital length-of-stay implies decreased income. However, hospital administrators may use financial incentives as well as persuasion to induce physicians to reduce lengths of patient stays and to cut the use of ancillary services.

Physicians are being invited to participate on hospital management committees, made subject to expanded peer review, required to deal with budgetary constraints, and encouraged to exert peer pressure on other physicians who

order too many tests or procedures (Sandrick, 1984). Hospital administrators are also faced with a sharply increasing physician supply, and the corresponding increase in requests for staff privileges may soon alter the balance of discretionary power in the administrator's favor (Abt, 1984). HCFA is currently undertaking studies to examine the feasibility of incorporating physician services associated with an inpatient stay into some form of prospective payment system.<sup>11</sup>

Since the PPS may encourage earlier discharges of Medicare hospital patients than under the old payment system, long-term care facilities (or other alternative care settings) may find increases in both the number of patients seeking their services and in the severity of illness among those patients. Some of this increase in volume and severity of illness at existing facilities, however, may be countered by the incentive for hospitals to form their own long-term care units and services, due to the current exception of these facilities from the PPS--and due to the excess supply of acute care beds. This may result in the transfer of hospital patients to hospital-based long-term care, rather than to facilities in other locations.

#### **Other Payers**

Payers other than Medicare may want to adopt DRG-based payment systems, or other methods which establish them as prudent buyers, in order to avoid a perceived possibility of having to bear higher proportions of overall health care costs as a result of Medicare cost-control efforts. In addition, if the PPS is

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<sup>11</sup> Recommendations by the Department on this issue will be contained in a report to be submitted to the Congress.

observed to be successful in containing the growth of Medicare hospital costs, other payers can be expected to develop similar payment systems in an attempt to hold down their costs, as well. Some evidence of movement toward DRG-based or other types of prospective payment systems has been observed among other payers, especially Medicaid (see Chapter 9). The impact of the PPS on other payers for inpatient hospital services will continue to be monitored over the next several years.

### **Discussion**

Clearly, the new Medicare Hospital Prospective Payment System represents an important change in the payment for health care. This chapter has outlined and discussed the social and economic factors leading to this change. In its overview of how the PPS works, and in its discussion what might be expected (through an examination of the PPS's structural incentives), this chapter has established a foundation for research and analysis on the system's impact. What remains is to fully examine whether the PPS is functioning according to its original goals and objectives, and to what extent its anticipated effects are taking root within the Nation's health care delivery system. Chapter 3 develops the framework for such an analysis and, in the process, formulates a set of study hypotheses to be tested and evaluated over the next several years.

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Chapter 3

## **CONCEPTUAL FRAMEWORK**

The PPS Study Issue Matrix in Chapter I presents an outline of the conceptual framework that provides the basis for our evaluation of the implementation and impact of the PPS. This chapter expands the concepts represented in that Matrix, and more completely describes the analytic approach that will be used to assess the effects of the PPS on the rate of increase of Medicare expenditures, the behavior of hospitals and other health care providers, the access to and quality of care received by Medicare beneficiaries, and the health care costs borne by other payers. It must be recognized that, along with the desired stimulus toward efficiency, the PPS may create some undesirable incentives among health care providers. Thus, this conceptual framework provides a basis for generating testable hypotheses about both the desirable and undesirable aspects of provider behavior under the PPS, and about both the desirable and undesirable consequences of that behavior. Because the PPS is one of many factors in a dynamic health care sector, this chapter also examines the problem of attributing the observed changes to the effects of the PPS rather than to other factors.

### **Analytic Approach**

The PPS creates strong incentives for changes in the behavior of health care providers--particularly the behavior of hospitals. These incentives are economic in nature, and the analytic approach that is used in this report is largely based on the assumption that providers will act as though they seek to maximize their welfare in purely economic terms--i.e., that they will maximize their financial profits (the difference between their costs and revenues) under the prevailing conditions. More realistically, it must be recognized that providers are also motivated by non-

pecuniary interests, such as professional satisfaction, community appreciation, etc., which may be pursued along with profits. However, analyses which assume the more direct economic motivation can more clearly focus attention on the mechanisms by which the PPS expects to achieve its objectives.

The analysis of Medicare reimbursement policy is concerned with both actual provider behavior (e.g., changes in admission rates, average length of stay) and the consequences of that behavior (e.g., changes in beneficiary morbidity and mortality, changes in health insurance premiums for the non-Medicare population). One of the direct measures of behavior, for example, is the extent to which the fixed payment per DRG provides incentives to reduce lengths of stay under the PPS, because extra days of stay increase the hospital's costs without affecting its Medicare revenue. The desirable aspect of this incentive is the elimination of excess hospital days, reducing the cost of health care. Alternatively, the same incentives may lead hospitals to admit more patients whose illnesses do not necessarily call for hospitalization, because of the prospect that they can be discharged sooner than the average patient in that DRG. Although this practice may increase profits for the hospital, it would result in higher overall health care costs—an adverse effect.

Although it may be more difficult to draw strong inferences from the observed consequences of provider behavior than from direct measures of that behavior, the assumption of economic motivation is useful in guiding this aspect of the analysis, as well. For example, hospitals have a financial disincentive to admit and treat very ill patients, for whom they are likely to incur more costs than the fixed DRG reimbursement will cover. If hospitals respond to these incentives, one might expect mortality rates among beneficiaries to rise, either because the very ill will

tend not to be admitted to the hospital in the first place or because treatment will be less aggressive than would have been optimal. Another example of the potential consequences of changed provider behavior is an increase in commercial health insurance premiums. If providers respond to PPS fixed payments not by increasing efficiency, but rather by increasing charges to patients covered by other payers, then the premiums for these policies will rise faster than otherwise would have been the case.

These examples illustrate an analytic framework that assumes that providers respond to all the economic stimuli with which they are confronted. This framework is appropriate in the context of this series of reports, because the PPS is essentially designed to change only economic incentives, and to leave other types of incentives unchanged. In addition to its policy relevance and simplicity, this framework is useful in that it facilitates the development of the study hypotheses that will be the foundation of our analysis of the impact of the PPS.

## Study Hypotheses

### Generating Study Hypotheses

The architects of the PPS, as well as those who have commented upon its likely effects, hypothesize certain changes in patterns of provider behavior, and in the outcomes of that behavior, in response to the new payment system. Some of these hypotheses are quite amenable to empirical testing; others are less so, or not at all testable. This analysis focuses on the former group of hypotheses—not because they are necessarily the most interesting, but because rigorous empirical testing of hypotheses is the best way to produce a credible analysis of the impact of the PPS.

Focusing on empirically testable hypotheses generally means that more attention will be paid to the outcomes of behavioral change than to the actual process by which this change occurs. For example, although it is a relatively straightforward task to analyze Medicare administrative data to determine if average length of stay for Medicare hospital patients has significantly declined since the PPS was instituted, there are competing hypotheses about how hospitals might achieve this expected effect. PPS proponents would hypothesize that the process involves gains in hospital efficiency, while opponents might argue that the process involves premature discharges and restriction of access to care. As a practical matter, none of these very policy-relevant hypotheses about process can be tested directly, because process is not observed directly. One can only draw inferences about process from observing other variables.

As a practical matter, credible analysis of the impact of the PPS necessitates a careful search for good analytic hypotheses. This search is likely to be more successful in developing ways to measure the observed outcomes of PPS-related behavioral changes than it will be in describing the way that these changes come about. However, multiple analyses of observed outcomes may permit relatively confident inferences about the underlying behavior. The issue of how length of stay may be reduced illustrates this point: while there is no economical way to collect enough data to describe the process by which hospitals may achieve this expected reduction in length of stay, empirical analysis can provide considerable evidence as to whether any observed change resulted from a degradation in access to or quality of care. Suppose that analysis of Medicare administrative data shows that five DRG categories account for a substantial proportion of the reduction in overall average length of stay. Several empirical analyses could help to resolve the issue of quality:

- An analysis to determine if admissions increased in these DRG's (to assess whether length of stay was being reduced by admitting patients who would not have been hospitalized prior to the PPS);
- An analysis of a random set of medical records drawn from the pre- and post-PPS periods to determine: (a) if quality of care differed perceptibly; or (b) whether the severity of illness was different; and
- An analysis of mortality data to determine if there were significant changes in the mortality rates of Medicare beneficiaries in the five selected categories.

If the results of these supporting analyses showed no differences between the pre- and post-PPS periods, one could reasonably conclude that providers reduced length of stay by increasing efficiency, rather than by reducing the quality of care.

In sum, if empirically testable hypotheses are carefully formulated, analysis can provide important information about the consequences of changes in provider behavior. Assessing how that behavior actually changed is more problematic, but considerable light can be shed on this issue by conducting complementary analyses that help to narrow the range of plausible behavioral explanations for a given outcome.

#### **Issues to be Addressed**

This series of four annual reports was mandated by the Congress in recognition of the fundamental change in Medicare policy engendered by prospective payment, and of the potentially far-reaching consequences of this change in policy. These annual reports are to monitor and evaluate the impact of the PPS on the Medicare program itself, on hospitals and other providers, on Medicare beneficiaries, and on other payers for inpatient hospital services.

The issues to be addressed in assessing the impact of the PPS are, as stated above, numerous and complex. For a summary of these issues, see the PPS Study Issue Matrix in Chapter I. A brief list of study questions related to these issues is presented below:

- Hospitals

- Are hospitals better able to predict revenues under the PPS?
- What new management strategies are being instituted?
- Is the provision of inpatient care becoming more efficient?
- Are improvements being made in hospital management information systems?

- Are hospitals specializing in the services that they provide and/or the conditions that they treat?
- Is the adoption of cost-reducing technology being encouraged?
- Are admissions and/or transfer policies being affected?
- How are coding procedures being affected?
- Are services which previously were provided in an inpatient setting now being provided in other treatment settings?

- Beneficiaries

- How does the PPS affect beneficiaries' out-of-pocket costs for health care?
- Is the quality of care affected? How can quality be measured? How can it be safeguarded?
- Are Medicare patients being prematurely discharged?
- Is there an increase in discharges to long-term care? Is this appropriate?
- Is beneficiaries' access to health care affected? Are certain services unavailable because of hospital specialization? Are less profitable cases being "dumped" into certain types of hospitals?

- Other Providers

- Is there an increase in the volume and severity of cases admitted to long-term care facilities or home health care under the PPS? What are the effects of this change?
- Has there been a shift of treatment from inpatient care to other settings? What are the effects of this change?
- How has the relationship between hospitals, physicians, and their patients been affected?

- Other Payers

- Has the PPS affected Medicaid expenditures?

- Have Blue Cross/Blue Shield or other private payers been affected? How?
- Is there a tendency for other payers to adopt DRG-based prospective payment systems?
- What other responses by other payers have been observed?
- Medicare Program
  - What is the effect of the PPS on total Medicare expenditures?
  - What is the effect on Medicare hospital expenditures? SNF and HHA expenditures? SMI expenditures?
  - Are pass-through costs (capital, direct medical expenses) rising disproportionately since the implementation of the PPS?
  - What is the outcome of medical review activity conducted under the PPS?

The set of research questions listed here is far from exhaustive, and even this list is not possible to address completely in this first annual report. As the PPS continues to be implemented over time in a dynamic health care sector, additional issues will surface, and current questions will be viewed from new perspectives. These new perspectives may allow us to say more about the changes occurring under the PPS, and whether they were indeed brought about by prospective payment.

#### **Attributing Causality**

It is difficult to draw strong causal inferences about the effects of the fundamental change in Medicare hospital payment represented by the PPS. Some of these difficulties are inherent in any research on issues of causality--under the best of circumstances, very strong assumptions (or evidence) about the motivation

and consequences of behavior are usually needed to conclude confidently that a policy intervention such as the PPS is responsible for the changes that are seemingly connected with it. This problem might be dismissed as a simple reality of all policy analysis, but the problem of analyzing the impact of the PPS is made particularly if not uniquely difficult by the rapidly changing nature of the health care sector. Many things are happening in the health care community that might plausibly account for changes of the sort that are anticipated under the PPS. In addition, the nationwide scope of the PPS precludes the existence of a natural "control," or test group.

Concern about rapidly rising health care costs is being expressed throughout the health care sector, and the PPS is but one (albeit a major one) of many public and private initiatives to control these costs. Thus, both the desirable and undesirable changes which are expected from and might be attributed to the PPS could actually be the consequences of other interventions, or of other factors, such as the increased supply of physicians or the emergence of competitive treatment settings. These changes may also be the joint product of multiple factors, including the PPS. It may, then, be very difficult in some instances to determine the extent to which the PPS caused a particular result, or whether some other initiative caused that result, or whether the two (or more) initiatives caused the result interactively.

Even initiatives that seemingly have no direct effect on Medicare may cause changes in the treatment of Medicare beneficiaries, because the provider community may have difficulty applying different standards of care to patients according to who pays the bill. Similarly, changes in Medicare may favorably or unfavorably affect the treatment of other payers' patients. Provider behavior may also change

in anticipation of the implementation of a new initiative, or in an effort to obviate the apparent need for one that is being considered. For instance, TEFRA, which introduced many of the incentives provided by the PPS, may have caused hospitals to change their behavior before the PPS was implemented, either in response to the incentives provided under TEFRA or in anticipation of the expected provisions of the PPS. This issue must be carefully considered when conducting time series analyses of the impact of the PPS.

Quite apart from the discrete and easily identifiable initiatives on the demand side of the health care market, important changes are occurring in the supply of health care services. Perhaps the most notable of these changes is the rapidly increasing supply of physicians, which enhances the competition for patients among providers. Their increased numbers should make physicians more responsive to their patients' wishes, more willing to participate in new practice arrangements the objectives of which may include cost control, and more likely to engage in direct competition. The growing number of non-physician health care professionals is also contributing to competitive pressure. Thus, changes that the PPS and other initiatives might not have otherwise been able to induce might be at least the partial result of other conditions prevailing in the health care market.

All of these changes in the health care system require that a great deal of caution be exercised in attributing good or bad effects to one or another intervention or policy change. However, this does not mean that nothing can be inferred about causality. PPS has the advantage of being implemented on a precise schedule, applying to a readily identifiable group of beneficiaries, and going into effect at different times for different providers; moreover, upon close examination, the incentives

provided by the PPS are also readily identifiable. These features should make it possible to structure analyses so as to draw inferences about which one or more of multiple factors account for the outcomes being observed. The issue of how hospital length of stay is to be reduced under the PPS is an important one, and it serves to illustrate how carefully structured analysis can support conclusions about the sources as well as the nature of observed change. As discussed above, evidence of significant reductions in length of stay is not sufficient to conclude that efficiency gains have occurred, but additional analysis--of admission rates in specific DRG's, quality of care, severity of illness, and illness-specific mortality--may allow the determination of the cause and process by which the observed change has been effected. The question of whether these efficiency gains have been induced by or are incidental to the PPS may then also be addressed.

A combination of longitudinal and cross-sectional analyses can be used to substantially strengthen the causal link of observed changes with the PPS. For instance, since secular declines in length of stay have preceded the PPS, it is necessary to try to isolate the effects of the PPS in time and by provider. Two additional analyses would facilitate this determination:

- An analysis to determine if the rate of reduction in length of stay increased when hospitals instituted the PPS; and
- An analysis to determine if, at any point in time, PPS hospitals had lower lengths of stay than did non-PPS hospitals.

If the results of both of these analyses were positive, then one could reasonably conclude that length of stay reductions resulted from desirable behavior related to

the PPS. To be sure, someone preoccupied with PPS shortcomings might offer an alternative hypotheses about causality, but the causal link to the PPS would certainly meet reasonable standards of policy analysis under the hypothetical circumstances.

While the attribution of effects is clearly a major concern of the impact analysis, its importance should not be overstated. First, the extensive analysis required to dispel all doubts about causality is likely to be both time and resource consuming. It may be more useful to policymakers to have more information quickly about what changes are occurring during PPS phase-in than to know later, albeit with greater certainty, that the PPS is responsible for them. Second, and more important, certain desirable changes in the health care system are the objectives of the PPS--if those changes do indeed occur, the Medicare program and its beneficiaries can be judged to be better off, whether or not the PPS can be established as the direct cause.

On the other hand, if the system changes in decidedly undesirable ways, there is a problem for the Medicare system, irrespective of whether the PPS is the culprit; it may not be necessary to know the cause with certainty in order to develop an effective solution.

#### **Analytic Methods**

##### **Longitudinal vs. Cross-Sectional Analysis**

The nature of the analysis that can be performed and the types of inferences that can be drawn from it depend on the kinds of data that are available. All such analyses will use one or the other or a combination of two broad classes of data:

- Longitudinal data--information about individual subjects or pools of subjects (providers, beneficiaries, etc.) at two or more points in time or during two or more periods of time; and
- Cross-sectional data--information about a number of different subjects at a single point in time.

In general, it is safer to draw causal inferences from longitudinal than from cross-sectional data, and analysis using both classes of data is better than analysis using one or the other alone. However, there are frequently circumstances in which data availability dictate the type of analysis which can be undertaken, with the consequent limitations.

Longitudinal analyses of Medicare data have the important advantage of illuminating differences between the pre-PPS and post-PPS periods. Examples of policy-relevant longitudinal analyses have been presented above, and their benefits and shortcomings discussed.

Additional examples, which are by no means exhaustive, further describe the uses of longitudinal data:

- Analysis of changes in admission rates, to determine whether the impact of PPS cost-control incentives is being counteracted by volume increases;
- Analysis of changes in the case-mix index for providers, to assess the potential extent of "DRG creep"--the inflation of payments by reordering principal diagnoses;

- Analysis of beneficiary data, to determine if admissions to SNF's subsequent to hospitalization increased after the implementation of the PPS; and
- Analysis of bill data and cost report data, to evaluate changes in the profitability of particular types of admissions after the introduction of the PPS.

As mentioned above, behavioral changes induced by TEFRA may confound longitudinal analyses of the PPS, but large and continuous jumps in the data can most likely be attributed to the effect of the latter program. In addition, the phased implementation of the PPS may make it possible to observe whether similar phasing occurs in the observed changes--this would provide strong evidence of the impact of the PPS.

Cross-sectional analyses are required either: (1) when the policy question pertains to the differential effects of the PPS on different classes of providers or beneficiaries; or (2) when no longitudinal data series exists. Some examples of analyses that involve this type of data are:

- Analysis of PPS-related information (length of stay, case mix index, etc.) by class of provider (size, location, ownership, etc.);
- Analysis of bill data to determine readmission rates and transfers to other hospitals (such data were not recorded prior to the PPS);
- Analysis of the relative profitability of different DRG's under the PPS, using payment data and charge data from the bill record; and
- Analysis of differences in behavior between hospitals that have come under the PPS system at different points in time.

As noted above, the classic use of cross-sectional data--the comparison of "test" and "control" groups--is not possible in the case of the PPS, due to its nationwide scope. Something approximating this approach may be applied in a comparison of hospitals under the PPS at some point in time (during the first year) with hospitals that are not yet being paid according to the provisions of the PPS, or with hospitals in the waiver States.

### **The Analysis of the Quality of Care**

As mentioned earlier, the PPS is designed to create economic incentives for hospitals to increase their efficiency. However, the condition for achieving the economic objectives of the PPS is that they be achieved without sacrificing the quality of care provided to Medicare beneficiaries. There are reasons to believe that some efficiency gains attendant to the PPS will enhance quality--for example, a reduction in unnecessary services may reduce the occurrence of complications. There are also reasons for concern that some hospitals will respond to economic incentives for cost savings in ways that degrade quality--e.g., premature discharges or the inadequate provision of ancillary services. As indicated in the PPS Study Issue Matrix in Chapter 1, our analysis of the impact of the PPS will be concerned with both positive and negative effects on the quality of care.

The analysis of the quality of care is generally time consuming and expensive. Therefore, the formulation of this type of analysis requires particularly careful attention, if it is to yield timely and credible inputs to the formulation of prospective payment policy. This calls for a mixed analytic strategy, combining

some types of analysis which will sacrifice precision in order to quickly produce general indicators of quality with others that will result in in-depth quality studies on carefully selected problem areas.

Basically, two types of data can be used for these quality of care analyses: one type is collected explicitly for that purpose, and addresses quality issues directly; the other is collected for other purposes, but contains some information on quality. The former involves primary data collection from medical records or hospital discharge abstracts, and data collected by the PRO's. Collection and analysis of these data are generally more expensive and time consuming (the PRO data, however, are routinely collected for this purpose), but produce reliable and credible results. However, such analyses must involve carefully chosen targets, so as to maximize the chances of finding whether the PPS has any significant effect on quality.

The latter kind of data--consisting mainly of administrative data collected for purposes other than the analysis of the quality of care--generally involve little or no additional expense to collect, but may be expensive to analyze. Their chief advantages are that they are generally available for the entire population of Medicare providers and that they can be analyzed for a broad range of patient groups. The problem with analyses of such data is that they provide only broad indications of changes in quality--e.g., a large increase in transfers to SNF's. Actual verifications of the indicated effects require the more painstaking analysis of medical records data or abstracts--e.g., to find out if a large increase in transfers to SNF's might be medically appropriate.

Therefore, the analysis of the quality of care should seek to make use of administrative data to provide early warnings regarding potential problems, and then to target more detailed analysis of medical records data. PRO data will also be useful in the study of quality issues, since these data are collected for the specific purpose of evaluating provider performance according to explicit criteria.

In recognition of the importance of this issue, a set of research efforts are being developed to investigate the issue of quality under the PPS. Included among this set is a project that would involve the continuous monitoring of the quality of care over time, through the tracking of certain "tracer" conditions for Medicare patients within a representative set of hospitals. Such a research design would allow for relatively quick feedback on the impact of the PPS on quality as the program matures. A description of Departmental efforts to monitor and evaluate the impact of the PPS on the quality of care is contained in Chapter 7.

### **Implementation of the Analytic Plan**

This chapter has expanded upon the analytic framework provided in the PPS Study Issues Matrix in Chapter 1, to describe an approach that provides the basis for generating empirically testable hypotheses that are pertinent to the policy issues surrounding Medicare prospective payment. In addition, the kinds of data than can be used to test these hypotheses have been discussed, and examples given of different kinds of possible analyses. This discussion naturally prompts questions regarding what types of data will be available, and when they will be available.

The next chapter addresses the question of the availability, quality, and timeliness of Medicare administrative data. As might be expected, the availability and quality of these data present fewer problems than does the timeliness of the data. There are inherent lags in the flow of data from providers to HCFA, and the previous retrospective cost-based reimbursement system provided few incentives for expediting data transmission. In addition to describing the kinds of data that are available for monitoring the PPS, and their sources, we present a plan for systematically projecting final values from early, incomplete data. These projections should allow us to carry out the analyses described above on a schedule that provides timely and policy-relevant results.

Chapter 4

## HCFA ADMINISTRATIVE DATA

In this chapter, we describe the contents of the major data bases that are part of HCFA's administrative data system, which constitutes the major source of information to be used in monitoring and evaluating the performance of the PPS. Because the timeliness of data is particularly important in this context, a brief overview of data flow precedes the data base description. This chapter concludes with the description of an analytic model that may be useful in making better data available for decisions on the PPS over the next several years.

HCFA collects a rich body of data, which can be used effectively to monitor and evaluate the PPS. Although the PPS changes the incentives of providers in fundamental ways, the current data collection process retains many of the reporting requirements of the previous system. Thus, the administrative data available for monitoring the PPS are similar in many respects to their pre-PPS analogues.

The Medicare administrative data bases include Part A data, associated with the Hospital Insurance (HI) program, and Part B data, associated with the Supplementary Medical Insurance (SMI) program. These data bases serve two important functions under the PPS: first, they provide a record of payment-related actions and contain the information on which those actions were based; and second, they provide information for program and policy analysis and research. Under the PPS, the quality of Medicare administrative data is clearly enhanced because of its importance in determining the level of payment. The completeness

of the data is ensured in many cases because the omission of information would preclude or otherwise adversely affect payment. For instance, medical record information, not a part of the payment process prior to the PPS, is now integral in determining Medicare payment; therefore, increased monitoring efforts can be expected from providers, intermediaries, and HCFA itself.

The timing of data availability at HCFA is strongly affected by the administrative purposes that particular data serve. A Part A admission notice from the fiscal intermediary or Part B deductible query from the carrier is typically the first indicator that a claim or payment record will be forthcoming, because this notice is used by the provider to ascertain Medicare eligibility and deductible status. The question is simple for HCFA to answer, and the routinized response to the provider is quick. By contrast, the processing of the Medicare claim or payment record is far more complex. Hence, claims processing takes much more time--about 61 days on average for Part A claims in CY 1982--and varies a great deal by provider, case complexity, etc. For most claims, most of this time is consumed by the provider, in collecting the necessary information, compiling it in a claim, and submitting it to an intermediary.

The quality and completeness of certain types of information in the HCFA data bases (particularly medical record information) is expected to improve under the PPS, because more information on diagnoses and surgical procedures is required to support the PPS payment mechanism than was required under the old cost-based system. Providers have an incentive to provide more complete medical record information because their revenue is affected, and HCFA now audits the accuracy of this information through its quality control and medical review functions. This

enhancement of HCFA data bases is essential to the effective functioning of the PPS, but it also means that HCFA may lack baseline data that are completely comparable to some types of data collected after the PPS phase-in began.

This lack of complete comparability must be taken into account in interpreting the early findings on the impact of the PPS. For example, since, as mentioned above, the quality and completeness of diagnostic and surgical procedure data is expected to have improved under the PPS, payments under the PPS are made on the basis of better information than was used to calibrate the original DRG weights. This improvement in data quality and completeness may be expected to affect the measurement of hospital case mix under the PPS ("DRG creep"), as cases are assigned to more costly DRG's than they would have been with information available under the old system.

While certain data elements take on greater importance under the PPS, the basic process of data generation and collection remains the same as under cost-based reimbursement. All Medicare administrative data are generated for one of five basic reasons:

- To certify a Medicare provider or supplier, and to determine costs for those providers still paid under cost-based reimbursement;
- To verify the eligibility of the beneficiary and/or ascertain the beneficiary's deductible status;
- To determine payment for the eligible beneficiary's episode of care;
- To review the medical necessity and appropriateness of the care provided;

- To monitor the performance of HCFA's agents--the intermediaries and medical review authorities;
- To provide descriptive program statistics; and
- To support program research, development, and evaluation.

Certification and cost data are produced by the provider on an annual schedule and updated periodically. The data to serve the remaining purposes listed above are generated as a consequence of individual inpatient episodes. Thus, in an important sense, there are only two broad classes of data trails, but the data may be organized in many different ways to serve multiple objectives.

#### **A Simplified Overview of Data Flow**

The Part A claim process starts when a beneficiary is hospitalized, and the provider notifies the intermediary of the admission. The intermediary then transmits an admission query to HCFA to determine the beneficiary's eligibility status. After processing the admission query against its administrative records, HCFA sends a reply to the intermediary and notes the admission in the beneficiary's records. When the intermediary receives the bill from the provider, it assigns the DRG and reviews the bill for completeness. The intermediary then authorizes payment to the provider and submits the bill to HCFA.

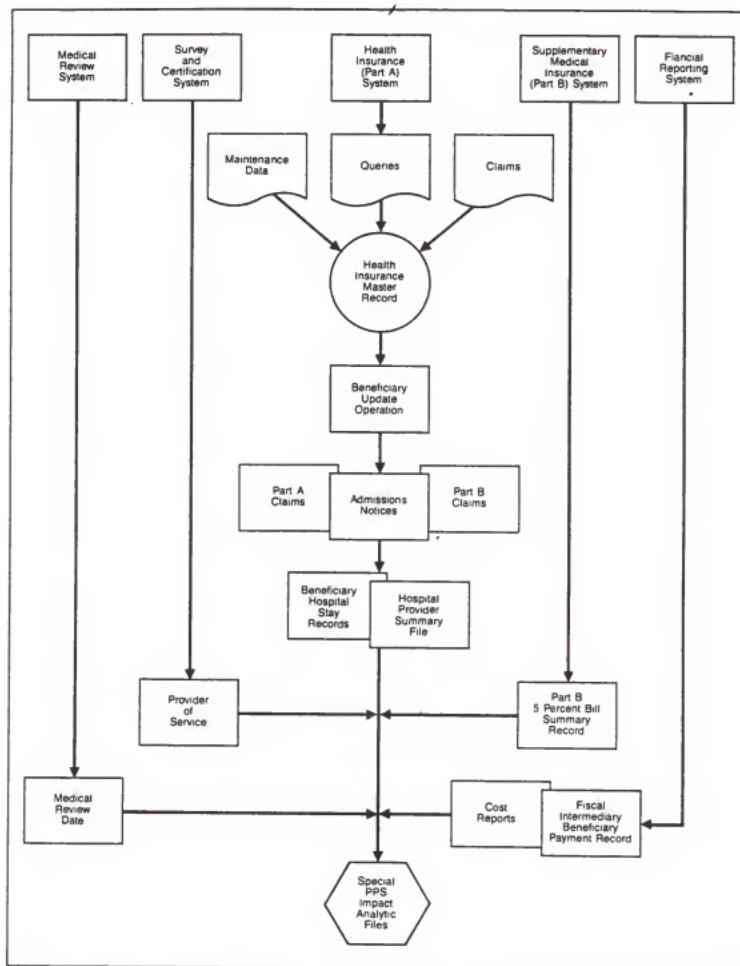
Part B outpatient and home health agency bills are also submitted to HCFA by the intermediary, and are processed similarly to Part A claims. Other Part B claims, however, are submitted to the carrier by the beneficiary or the supplier of

services (e.g., the physician). When queries are sent to HCFA on the patient's Part B deductible status, they are handled in the same way as are Part A queries.

This administrative process results in a data flow that is shown in simplified form in Figure 4.1. HCFA receives three types of data for claims processing: maintenance data, admission and deductible queries, and claims and payment records (Part A and Part B). HCFA receives updates to the maintenance data (e.g., enrollment, termination, and address changes) that reflect changes to the SSA's master records for the individual. Admission queries and Part A claims are received from intermediaries representing the providers. Part B deductible queries and Part B payment records come from carriers. HCFA also maintains detailed data describing each institutional provider, obtained during the certification process.

All of the claims processing data received by HCFA are matched against the Health Insurance Master Record, which contains all current information for each beneficiary. As a result of these matches, updates are made to the Master Record, and a file is generated containing all of the transactions made during the week. From this weekly transactions file, three separate files are generated: one each for the admission notices, Part A claims, and Part B payment records. These data bases can then be merged with each other, the provider of service file, and other data files, to construct statistical files for particular analytic needs.

**Figure 4.1**  
**Simplified diagram of Health Care Financing Administration data available for Prospective Payment System, (PPS) monitoring**



## **HCFA Data Bases**

HCFA administrative data may be organized into four categories, according to the kinds of data contained in each data base:

- Hospital-level data;
- Beneficiary-level data;
- Fiscal intermediary-level data; and
- Medical review activity data.

Data in each of these categories are described below.

### **Hospital-Level Data**

Hospital-level data maintained by HCFA as part of its administrative data system include:

- Data from the Medicare Cost Report; and
- The Provider of Service file.

In addition, a provider summary file is derived by aggregating data from individual patient bills (see the description of the PATBILL file, below). Data from these files constitute an important source of information to be used in analyzing the impact of the PPS on hospitals and other providers.

The Medicare Cost Report is a lengthy and complex document which was originally designed to: (1) compute the reasonable costs of services provided to Medicare beneficiaries in the hospital; and (2) determine the final settlement payment due to or from a hospital. The cost report was also designed to compute reasonable costs and settlements for the Maternal and Child Health (Title V) and Medicaid (Title XIX) programs.

The Provider of Service (POS) file is an automated record of information on all institutional providers (hospitals, skilled nursing facilities, home health agencies, etc.) participating in the Medicare and Medicaid programs. The information in the file is based on documents generated by the procedure used by State agencies to certify providers for participation in Medicare and Medicaid, based on HCFA guidelines and regulations.

#### **Beneficiary-Level Data**

The beneficiary-level administrative data maintained by HCFA include the following:

- Health Insurance Master Records;
- Admission notices;
- Part A inpatient bills; and
- Part B bills and payment records.

These data, in addition to providing a basis for studying the impact of the PPS on Medicare beneficiaries, can also be aggregated to study hospital-level or system-wide impacts.

The Health Insurance Master Record provides comprehensive information on all beneficiaries, for the purpose of administering Medicare claims. Each beneficiary is uniquely identified by a health insurance claim number, which is usually based on his or her social security number. The Master Record contains three types of information--maintenance, utilization, and demographic information. Maintenance information describes the beneficiary's enrollments and terminations of benefits, change of address, death, etc. Utilization information describes hospital and SNF admissions, Part A bills, certain Part B payments, and Part B deductibles.

The Master Record maintains current information, rather than a complete history of all transactions. For example, when a beneficiary uses lifetime reserve days, the Master Record is updated to reflect how many lifetime reserve days remain. Some historical data are also recorded. For example, because of lag times in hospital billing, the Master Record must keep track of which hospital bill pertains to which spell of illness or benefit period; thus, the Master Record maintains up to the five most recent benefit periods for Part A claims. For physical therapy and outpatient psychiatric Part B claims, data are accounted for on a yearly basis; the Master Record contains data from up to the 5 most recent years of outpatient psychiatric claims, and from up to 3 years of physical therapy claims.

After HCFA successfully processes an intermediary's admission query, determining that the beneficiary is eligible, an admission notice is prepared for later statistical processing. The admission notice record contains the health insurance claim number, admission data, the provider number, the date on which the admission notice was received by HCFA, and the date on which the notice was processed. This represents the first indication that a Medicare patient has been admitted to the hospital.

All of the Part A inpatient bills (the PATBILL file) submitted by intermediaries which pass consistency edit checks and are successfully matched to the Health Insurance Master Record become part of HCFA's statistical system. Bills that fail the consistency checks or are rejected when compared to the Master Record are returned to the intermediary for correction. Accepted Part A inpatient bill data contain the health insurance claim number, demographic data from the master record (age, sex, race, zip code, etc.), the statement period, the admission date, transaction codes, patient status, and processing dates, as well as accommodation and ancillary charges.

As a result of the PPS, new data elements were added to the inpatient bill record, and the fundamental nature of some of the original data elements changed. The new data elements are the DRG for the case, an outlier indicator (day or cost), an outlier amount, a discharge destination code, and an indicator for bills paid under the PPS.

Before the PPS, the principal discharge diagnosis for each inpatient hospital stay was coded from a 45-word narrative for a 20 percent sample of beneficiaries. This 20 percent sample--the MEDPAR file--also contained data on the first surgical procedure performed. Beginning in October 1983, all inpatient hospital bills contain the ICD-9-CM codes for the principal diagnosis and up to four additional diagnoses, and the principal surgical procedure and up to two additional procedures. The DRG is assigned from these codes and the beneficiary's age, sex, and discharge status.

Another fundamental change in the PATBILL file is that each PPS bill represents the entire inpatient hospital stay. Previously, information for a stay could be recorded on several interim bills, which would have to be aggregated to construct a summary record for the entire stay. Under the PPS, there is only one bill, except for hospital stays which overlap the transition period when a hospital entered the PPS program.

Part B data consist primarily of outpatient bills and medical insurance payment records. Outpatient bill records contain the health insurance claim number, some demographic data, total charges, the reimbursement amount, and processing dates. Payment records contain the health insurance claim number, demographic data, type and place of service for the largest single charge, reimbursement amount, service dates, physician/supplier information, and the number of separate charges. The payment record does not contain data on diagnoses or related charges.

A sample summary record is prepared for all Part B bills for a 5 percent sample of beneficiaries. The Part B summary record provides the health insurance claim number, demographic data, up to 18 submitted charges, type of charges, and place of service information from the payment records.

#### **Fiscal Intermediary-Level Data**

The Intermediary Benefit Payment Report is a new report containing aggregate data on payment and claims activity for PPS and non-PPS hospitals, outpatient services, and selected non-hospital providers. Intermediaries are required to file completed reports with HCFA by mail on a monthly basis. The purpose of this report is to provide HCFA with an ongoing source of current data on PPS and non-PPS providers.

Since this report is a direct result of efforts to monitor the implementation of the PPS, many statistics are reported in it which were not previously compiled. As a result, the various intermediaries have tended to develop their own data collection methods and procedures. Until these methods and procedures can be standardized, the use of statistics based on these reports for system-wide assessments is problematic.

#### **Medical Review Activity Data**

The medical records from a random 5 percent sample of admissions at each PPS hospital are to be reviewed by the appropriate Peer Review Organization.

(PRO), to determine whether the admission was medically necessary and whether services were delivered in the most appropriate setting. If this review yields a 95 percent statistical chance that there is a total error rate in excess of 2.5 percent at any hospital during any quarter, then all of the cases at that hospital will be reviewed during the next quarter.

The PRO must also review transfers from any PPS-covered unit to any exempt unit in the same hospital (e.g., psychiatric units, rehabilitation units, or swing beds), transfers from a PPS hospital to any other hospital, and readmissions that occur within 7 days of discharge, because these actions generate payments above that corresponding to the typical case in each DRG. If a pattern of unnecessary or inadequate care is found, it is to be referred to the regional office along with a recommendation for sanctions.

All day outlier cases are reviewed to determine whether the admission was medically necessary and the length of stay was appropriate. Each individual day of the stay is reviewed by the PRO. All cost outliers identified by the hospital are reviewed to determine if the admission and all covered services were medically necessary and appropriate.

All cases involving pacemaker insertion and other procedures where patterns of abuse were previously identified are reviewed to determine whether the procedures were necessary. The review can result in denial of the procedure or of the entire admission. When just the procedure is denied, then a new DRG is calculated for the case.

A review of the diagnostic and procedural information that was used for DRG classification is undertaken for each of the cases described above. In addition, a random sample of at least 3 percent of each provider's cases is selected solely to determine whether the diagnostic and procedural information listed is supported by the medical record. This review must be performed at least quarterly. If the sample indicates a 95 percent likelihood that the DRG error rate exceeds 2.5 percent in any one quarter, then the DRG classification will be reviewed for 100 percent of the cases at that hospital during the next quarter.

#### **Monitoring the Early Impact of the PPS**

As described above, HCFA collects data from a variety of sources, for purposes of program administration, oversight, financial management, and evaluation, as well as for utilization review, analysis, and research. Recognizing the need for continuous monitoring of the new prospective payment system, especially in its early stages of implementation, HCFA has developed a Prospective Payment Monitoring System, involving the regular reporting of information based on previously existing administrative data sources, improvements in existing data sources, and new sources of data focused on the impact of the PPS.

#### **Data System Improvements**

The demand for definitive data on the impact of the PPS has placed increased emphasis on getting bills processed, edited, and accepted into central files as quickly as possible. Toward this end, efforts have been made to speed up and improve the accuracy of reporting by hospitals and intermediaries.

The availability of a PATBILL file containing 100 percent of hospital bills represents an improvement in the data available for analysis of the PPS. With the PATBILL file, it is possible to generate data at lower levels of detail than before (e.g., by individual provider or DRG), with increased statistical reliability.

### **The PPS Monitoring Report**

A monthly report is generated by HCFA for the purpose of monitoring the impact of the PPS. This report contains primarily nationwide aggregate information on the following topics:

- PPS phase-in status--the number of hospitals operating under the new system and hospitals excepted from or given special consideration by the system;
- Benefit payments by type of facility;
- Admissions monitoring--data on the current volume and pattern of admissions;
- Case-mix and DRG's--case-mix monitoring data and a listing of the most frequent DRG's;
- Length of stay--data on overall trends in length of stay;
- Outliers--current data on the number of day and cost outliers and outlier payments; and
- Discharge destination--the distribution of patient bills by discharge destination.

In addition, a report on medical review activity is included in the monthly report.

The PPS Monitoring Report thus serves as a continuous, timely source of information on the aggregate impact of the PPS.

#### **Providing Timely Information for PPS Decision-Making**

The PPS evaluation effort may require more timely information than it is reasonable to expect any large administrative data system to provide. Preparation of Medicare claims by providers, evaluation and payment by intermediaries, and processing into a useable data base by HCFA have historically consumed about 2 months' time, on average; many bills take much longer. In spite of the above-cited improvements in the HCFA data system, new processing requirements and a more aggressive approach to medical record review by the PRO's will likely result in similar lags before the PATBILL and other PPS data sources are complete and ready for analysis. Thus, by the time reasonably complete payment data are available for any given year, HCFA may have already been required to make important regulatory decisions for the next year.

To make the mandated annual adjustments to the PPS more confidently, and to allow for the more timely evaluation of the system's performance, HCFA is developing a means by which to assess the financial and other consequences of the PPS before complete claims data are available, by supporting efforts to construct an analytic model to provide early, reliable estimates of key PPS parameters. This model, which should be operative within the next year, is described briefly below.

The model is designed to project estimates of final values of key PPS parameters--e.g., admissions, length of stay, case-mix index--on the basis of early and incomplete data. It will be designed to use as much or as little data as are available--although the more complete and current the data input, the better will be its projections.<sup>1</sup>

The model will be designed to incorporate current data on an ongoing basis, and to provide continually more refined estimates of key PPS parameters as more complete data become available for any group of providers for any given period of time. Briefly, the model will operate as follows:

- Historical (pre-PPS MEDPAR) data will be used to develop baseline profiles for individual providers or groups of providers--lag times for submission of admissions notices and processing of bills, case-mix indices, etc.;
- Current admission notices will be used to estimate total Medicare admissions on a provider-by-provider basis for any time period on a current basis;
- Current stay record (PATBILL) data will be used together with historical data to estimate final expected payments to providers by DRG up to the time that incomplete data are available; and
- Information from the provider of service file will be used only to keep abreast of when individual hospitals pass through different PPS stages.

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<sup>1</sup> The problem is analogous to the projection of final vote tabulations from early returns. Gross trends can be projected from very incomplete returns. However, the more votes that are counted, the more reliable is the projected final tally.

The model will produce updated estimates of key PPS parameters each time it receives input of more current data. Thus, findings may be continually aggregated and fine-tuned as the PPS develops over time.

### **Discussion**

Thus far, this report has provided an overview of Medicare hospital reimbursement and the development of the current prospective payment system. We have specified a number of criteria by which to evaluate the impact of the PPS, and provided a discussion of the methodological considerations relevant to the analysis at hand. Finally, this chapter has described some of the data sources available for monitoring the performance of the PPS. Thus, Part I has set the stage for the presentation and interpretation of the available data, in fulfillment of the Congressional mandate in Section 603 of P.L. 98-21. Part II contains our findings on the first-year performance of the PPS.

Chapter 5

**PROGRAM IMPLEMENTATION**

**Introduction**

The integrity of any change in Federal legislation initially depends upon its successful implementation--the way that program changes are carried out and the extent to which those changes are accepted by the affected individuals and organizations. The implementation process is especially important in the case of the Medicare Hospital Prospective Payment System, because the PPS represents such a fundamental and far-reaching change to the Medicare program and to other aspects of the health care delivery system.

The first four chapters of this report have outlined and described the basic tenets and features of the PPS, and developed a framework for evaluating its effects. In Part II, starting with this chapter, preliminary findings on the first-year performance of the PPS are presented. This presentation logically begins with a discussion and analysis of the critical phase-in and implementation process of the new system.

The PPS Study Issue Matrix in Chapter I contains a listing of the general issues to be addressed regarding the implementation of Medicare prospective payment. This listing includes the following topics:

- Development of the PPS;
- Proportion of hospitals covered by prospective payment;

- Proportion of payments made under the PPS;
- Admission pattern monitoring;
- Medical review activity; and
- Payment rate updates and adjustments.

The purpose of this chapter is to address these issues by reporting the data available on the implementation of the PPS during its first year.

This chapter begins with a discussion of the legislative mandate and intent of the PPS, and its subsequent interpretation and implementation through the Federal Code of rules and regulations. Aspects and issues surrounding the status of the phase-in of the PPS are then discussed.

#### **The Implementation Process**

In April of 1983, the Social Security Amendments of 1983 (P.L. 98-21) were enacted, thereby establishing the statutory framework for the Medicare Hospital Prospective Payment System. The law, however, left unanswered many questions about the implementation of the new system, and a host of organizational issues remained to be resolved before the system could become operational on October 1 of that year.

The Health Care Financing Administration undertook a number of initiatives over the next several months to set the program in place so as to minimize disruptions to both providers and beneficiaries. These initiatives--plans for some of which actually began before the law was signed--included:

- Establishment of a special internal implementation task force;
- Initiation of intermediary orientation to the PPS;
- Initiation of provider orientation to the PPS;
- Internal training and educational activities;
- Finalization of the DRG "grouper" program<sup>1</sup>;
- Development of a methodology for establishment of relative resource weights;
- Release of billing instructions and determination of funding allocations;
- Completion of internal system changes and audit changes; and
- Publication of regulations and announcement of payment rates.

Of particular importance was the publication of the rules and regulations which interpreted the legislation and allowed for its implementation. An interim final rule (and accompanying explanatory material) was published in the Federal Register (Vol. 48, No. 171, pp. 39752-39890) on September 1, 1983. Following a public comment period and subsequent consideration of the issues raised by the comments received, HCFA published the final rule for the first year of the PPS in the Federal Register (Vol. 49, No. 1, pp. 234-334) on January 3, 1984.

Together, the initial legislative mandate and the published rules and regulations addressed several important program issues relating to the initial implementation of the program, including:

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<sup>1</sup> The "grouper" program is a computer software program used by intermediaries to screen the inpatient bill and assign the discharge to the appropriate DRG. It is part of a larger "pricer" system designed by HCFA staff to be used in paying PPS bills.

- The phase-in of Federally-determined payment rates;
- Exclusion criteria for certain groups of hospitals;
- Medical review activity under the new system; and
- The establishment and adjustment of payment rates.

These issues are briefly discussed below.

#### **The Transition Period**

As discussed in Chapter 2, the transition to payment on a per discharge basis commenced for each affected hospital with its first cost reporting period beginning on or after October 1, 1983. Hospitals were not permitted to change fiscal year dates solely for the purpose of deferring or accelerating their inclusion under the PPS, unless a technical change in ownership caused the change in the hospital's cost reporting period.

Section 1886(d)(1)(A) of P.L. 98-21 also provided for a 3-year transition period to a national payment rate. It was feared that the switch to prospective payment might cause undue hardship to individual hospitals that, in the short-run, might be unable to adjust to the new reimbursement environment. Therefore, to minimize the possible disruptions caused by this sudden and profound change in payment policy, each hospital's payment rate is determined during the transition period on the basis of a blend of the hospital's own costs in its base period (the hospital-specific portion) and the regional and national DRG rates (the Federal portion).<sup>2</sup>

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<sup>2</sup> See Chapter 2 for a more detailed discussion of the PPS transition period.

## **Exclusion Criteria**

Several types of facilities were excluded by law from prospective payment: psychiatric hospitals; rehabilitation hospitals; distinct part psychiatric and rehabilitation units of hospitals; children's hospitals; long-term hospitals; and hospitals located in the U.S. territories. In addition, a special limited-time exclusion for alcohol/drug treatment hospitals and alcohol/drug units in acute care hospitals was added in the January final rule.<sup>3</sup> This exclusion was made available because it was suggested that the current DRG's did not accurately distinguish the length of stay characteristics of patients in detoxification programs from those of patients in rehabilitation programs. The exclusion for alcohol/drug hospitals and units is available only until October 1, 1985. By that time, HCFA plans to have reexamined this issue, and to have made appropriate adjustments to permit inclusion of alcohol/drug treatment services in the PPS.

Psychiatric, rehabilitation, and alcohol/drug hospitals and units are determined to be eligible for exclusion from prospective payment based on specific criteria relating to the types of patients treated, services provided, staffing characteristics, and accreditation status. Each hospital or distinct part unit is subject to or excluded from the PPS based on its status at the beginning of each cost reporting period. This status is to continue throughout the period, unless the hospital is excluded due to its participation in an approved demonstration project.

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<sup>3</sup> See Chapter 2 for a further discussion of this topic.

or a statewide waiver is granted. This approach was taken to avoid administrative difficulties that could arise if a hospital or unit were paid under different systems during a single period.

#### **Medical Review Activity**

Every Medicare hospital was required by P.L.98-21 to enter into a contract with a peer review organization (PRO), for the review of admissions patterns, lengths of stays, transfers, services furnished in outlier cases, the validity of diagnostic information, and the quality of health care provided. This requirement was to have been carried out by November 15, 1984.<sup>4</sup> Prior to the award of a PRO contract in a given area, the medical review function was to be conducted by a professional standards review organization (PSRO) or--in the absence of a PSRO--by the intermediary.

The new PRO's represent an effort by HCFA to intensify the review of Medicare claims, in order to ensure that the care rendered by the hospital is necessary, appropriate, and of acceptable quality. Each PRO is required to be accountable for three admission and five quality objectives (with certain exceptions in PPS waiver States and exempt areas):

#### Admission Objective Areas

- Shifting of inappropriate inpatient admissions to outpatient settings;
- Reduction of unnecessary admissions and procedures; and

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<sup>4</sup> The original deadline for PRO contracts was October 1, 1984; this was changed to November 15, 1984 by P.L. 98-369, the Deficit Reduction Act of 1984.

- Reduction of unnecessary admissions by specific hospitals and physicians.

#### Quality Objective Areas

- Reduction of unnecessary admissions;
- Reduction of mortality rates for specific "problem" procedures;
- Reduction of unnecessary invasive procedures;
- Assurance that patients will receive complete treatment and adequate ancillary services; and
- Reduction of post-procedural complications.

The more stringent requirements of the PRO arrangement--both in terms of the hospital's accountability to the reviewing entity and the PRO's accountability to HCFA--were devised in the hope of encouraging a more aggressive approach to monitoring the quality of care than was taken by the previous PSRO's.

In response to the concern that the PPS might encourage hospitals to increase the volume of admissions,<sup>5</sup> an admissions pattern monitoring program was developed by HCFA. Based on a central file of all Medicare discharges, HCFA compares the hospital's discharge volume during each quarter with its own discharge volume over the previous eight quarters. If the hospital's discharge volume is found to have significantly increased, this information is sent to the PRO for analysis. If the PRO finds a pattern of inappropriate admissions, the hospital is subject to corrective action.

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<sup>5</sup> See the discussion in Chapter 2.

In addition to the specific objectives listed above, the validity of coding used in DRG assignments is monitored by the PRO's. At least every 3 months, the PRO reviews a random sample of discharges at each hospital to compare diagnostic and procedural coding with the medical record. These reviews may take place at the hospital or off-site, at the discretion of the PRO. Payments are recalculated if errors are discovered.

If the PRO determines that the hospital has permitted unnecessary admissions, misrepresented billing information, or billed beneficiaries inappropriately, HCFA may deny payment in whole or in part with respect to services provided to the beneficiary. HCFA payment denials may be appealed. A HCFA determination that there is a pattern of inappropriate admissions or billing practices that have the effect of circumventing PPS provisions may also be referred to the Inspector General of the Department of Health and Human Services for possible termination of the hospital's provider agreement, or monetary penalties.

All of the PRO contracts were signed by the November 15 deadline. Statistics describing the medical review activities taking place during the first year of the PPS are presented and discussed later in this chapter.

#### **Payment Rate Adjustments**

The regulations published on September 1, 1983 established prospective payment rates to be used in FY 1984 for each DRG. These rates were determined by multiplying the DRG relative weighting factors by the applicable standardized payment amounts (see Chapter 2). In the absence of inflation and technological

change (and assuming "perfect" DRG definitions), the initial DRG rates could remain fixed without distorting the financial incentives that the PPS system is intended to create. Recognizing the dynamic nature of the health care sector, however, both the relative weighting factors and the standardized payment amounts will have to be adjusted over time, in order to avoid distortions in payments and the resulting financial incentives.

For this reason, the Congress has required the periodic adjustment or "recalibration" of the DRG relative weights for discharges occurring in FY 1986 and at least every 4 years thereafter, to reflect changes in treatment patterns, technology, and other factors. In addition, the standardized payment amounts are to be updated for each fiscal year, taking into account changes in the cost of efficiently and effectively providing medically appropriate and necessary care of high quality.

#### **Program Status**

Statistics for the first year of the PPS broadly indicate the extent to which Medicare's new payment system has been implemented, and how hospital providers and others are responding to it. Information presented in this section focuses on the four major areas relating to implementation: hospitals covered under the PPS, certified hospitals and units excluded from the new system, medical review activities, and payment rate adjustments.

## Hospitals Covered Under the PPS

A total of 5,405 hospitals--or 81 percent of all hospitals in the United States--were operating under the PPS as of the end of September 1984. This represents virtually 100 percent of all "PPS-eligible" hospitals--that is, hospitals subject to coverage under the PPS.<sup>6</sup> Figure 5.1 portrays the cumulative total of hospitals coming under the PPS on a monthly basis, from January through September of 1984.

Because a substantial number of eligible providers begin their accounting years on either October 1 or January 1, over half of all "PPS-eligible" hospitals were covered under the PPS by the end of January 1984. Similarly, because many hospitals begin their individual fiscal years on July 1, the July figures reflect a substantial jump in the total number of providers covered under the new system. In fact, almost one-third of all "PPS-eligible" hospitals came under prospective payment in July 1984 alone.

Through September 1984, 37 percent of all inpatient bills processed by HCFA had been paid under the PPS. When long-stay hospitals, excepted hospitals and units, and hospitals in waiver States are excluded from consideration, this figure rises to almost 45 percent--that is, 45 percent of all bills from "PPS-eligible" hospitals processed through September 1984 had been paid under the PPS.

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<sup>6</sup> For the remainder of this report, the term "PPS-eligible" is used to indicate hospitals subject to coverage under the PPS by the end of FY 1984, or bills for stays at these hospitals.

**Figure 5.1**  
**Hospitals covered under the Prospective Payment System,  
through end of each month: Fiscal year 1984**

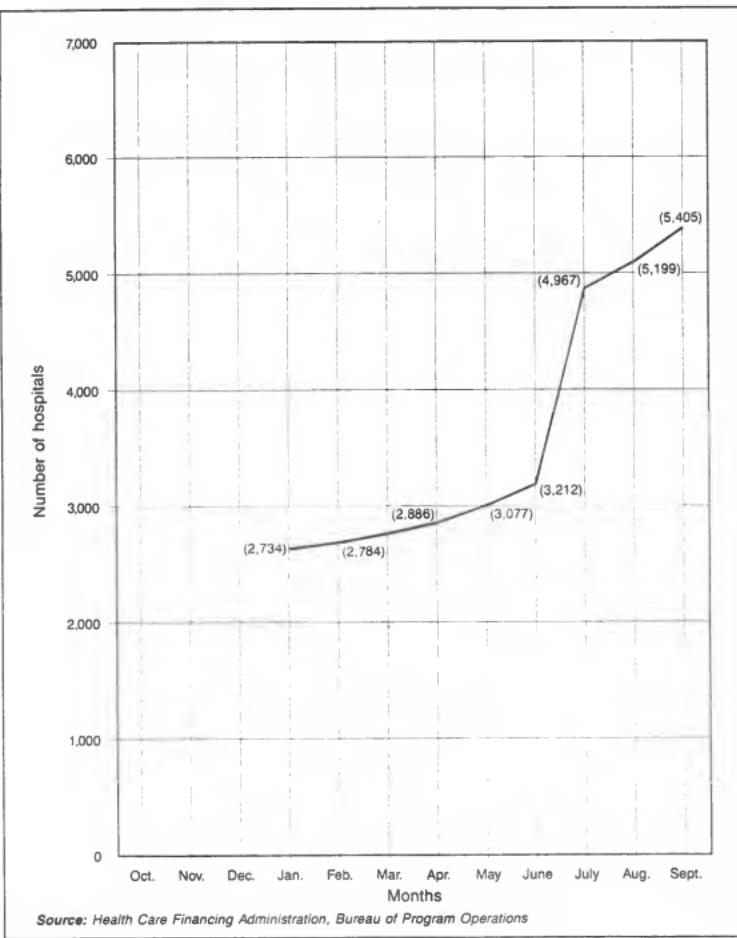


Table 5.1 shows the distribution of PPS bills by hospital group. These figures are derived from our PPS Impact Data Base, which consists of short-stay hospital bills received through July 1984 for stays through June 1984.<sup>7</sup> The first column of numbers in this table represents the extent to which PPS implementation is proceeding for hospitals in each group, by showing the percentage of all "PPS-eligible" bills which have been paid under the new system. The second column in the table shows the percentage of PPS bills accounted for by each hospital group.

As seen in Table 5.1, the implementation of the PPS as of June 1984 was progressing at similar rates for hospitals in six of the nine census divisions. Three regions seen to be atypical in this respect:

- New England, where 81.5 percent of all "PPS-eligible" bills through June had been paid under the PPS--indicating that hospitals in this region came under the new system very early on;
- The South Atlantic region, where 58.5 percent of all "PPS-eligible" bills through June had been paid under the PPS; and
- The Middle Atlantic region, where, since New Jersey and New York had waivers from the PPS, and almost all of Pennsylvania's hospitals have fiscal years beginning on July 1, only 1.2 percent of all "PPS-eligible" bills through June had been paid under the PPS.

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<sup>7</sup> This data base is described in more detail in Chapter 6.

Table 5.1

**DISTRIBUTION OF PPS BILLS BY HOSPITAL GROUP  
FROM PPS IMPACT DATA BASE**

<u>Group</u>	<u>Proportion of "PPS-Eligible" Bills</u>	<u>Percent of PPS Bills in Each Group</u>
<u>All Groups</u>	41.2	100.0
<u>By Census Division</u>		
New England	81.5	6.6
Middle Atlantic	1.2	0.2
South Atlantic	58.5	27.2
East North Central	43.2	21.2
East South Central	36.9	8.5
West North Central	38.0	9.5
West South Central	39.4	12.2
Mountain	33.9	3.6
Pacific	35.0	10.9
<u>By Urbanicity</u>		
Urban	39.7	69.6
Rural	44.8	30.4
<u>By Teaching Status</u>		
Non-Teaching	42.9	69.8
Ratio of Interns and Residents to Beds Less than 0.25	40.0	27.6
Ratio of Interns and Residents to Beds 0.25 or Greater	23.3	2.6
<u>By Ownership</u>		
Not-for-Profit	41.1	69.0
Proprietary	32.3	8.1
Government	45.9	23.0

Source: HCFA, Bureau of Data Management and Strategy.

Table 5.1 also indicates that urban hospitals have a slightly lower implementation rate than do rural hospitals. Teaching hospitals with high concentrations of interns and residents have also been relatively slow to come under prospective payment. In addition, proprietary hospitals have a lower implementation rate than do hospitals in other ownership categories.

Table 5.1 also shows the percentage of PPS bills in the PPS Impact Data Base that were received from hospitals in each group. By census division, only 0.2 percent of all PPS bills through June came from hospitals in the Middle Atlantic region, while the South Atlantic and East North Central regions together accounted for almost half of the PPS bills through June. Almost 70 percent of all PPS bills in our analytic file came from urban hospitals. In addition, non-teaching hospitals account for almost 70 percent of PPS bills in our file, while only 2.6 percent come from teaching hospitals with high concentrations of interns and residents. Proprietary hospitals account for only 8.1 percent of all PPS bills in our file.

#### **Exclusions and Special Considerations**

As previously discussed, a number of certified hospitals and distinct-part units of certified hospitals have applied for and received exclusions under the new prospective payment system. Table 5.2 lists the number of hospitals of each type that are currently excluded from the PPS.

The number of excluded hospitals and units is shown for both February and September of 1984. As this table points out, the numbers of some types of excluded hospitals (such as psychiatric hospitals) have remained virtually unchanged since

Table 5.2

CERTIFIED HOSPITALS AND UNITS EXCLUDED FROM THE PPS  
FEBRUARY 1984 AND SEPTEMBER 1984

<u>Type of Hospital</u>	<u>Number of Hospitals</u>		<u>Number of Units</u>	
	<u>February</u>	<u>September</u>	<u>February</u>	<u>September</u>
Short-Stay in Waiver States	555	552	---	---
Psychiatric	428	439	361	722
Rehabilitation	29	49	153	308
Alcohol/Drug	6	25	13	216
Long-Term Care	37	83	---	---
Children's	67	47	---	---

Source: HCFA, Bureau of Program Operations and Health Standards and Quality Bureau.

February, while other types (such as rehabilitation hospitals) have greatly increased in number. Extremely large increases in part may reflect lag times encountered in the exclusion certification process. In other instances, final rules were modified to allow for a greater number of exclusions--such as the special exclusion for alcohol/drug treatment hospitals and units in acute care hospitals, which was added in the final PPS rules in January 1984.

In addition to the above-mentioned types of hospitals and units excluded from the PPS, other types of hospitals have received special consideration under the new system. These include:<sup>8</sup>

- Sole community hospitals, defined as hospitals that, by reason of factors such as isolated location, weather conditions, travel conditions, or absence of other hospitals, are determined by the Secretary of Health and Human Services to be the sole source of inpatient hospital services reasonably available to Medicare Part A beneficiaries in a geographic area--as of September 1984, 304 of these facilities had been accorded special treatment under the PPS;
- Hospitals involved extensively in treatment for and research on cancer--there were four of these facilities being given special treatment under the PPS as of September 1984;

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<sup>8</sup> See Chapter 2 for a description of the special provisions made for these facilities.

- Short-term acute care hospitals meeting the requirements for special treatment as referral centers--as of September 1984, there were six of these facilities; and
- Hospitals which previously allowed extensive direct billing under Part B--as of September 1984, there were six facilities receiving special treatment under this heading.

In addition, Christian Science sanatoria are eligible for special treatment under the PPS.

#### **Medical Review Activity**

Following the passage of legislation requiring the Secretary of Health and Human Services to enter into contracts with the Peer Review Organizations, 54 statewide PRO areas were proposed--one for each of the 50 States, the District of Columbia, Puerto Rico, Guam/American Samoa, and the Virgin Islands. This, in turn, required the solicitation, negotiation, and award of 54 separate contracts. Apportionment of funds from the Medicare Trust Fund to carry out the process was approved by the Executive Office of Management and Budget in June 1983.

Requests for Proposals (RFP's) for 47 PRO States/Areas were issued on February 28, 1984. RFP's for the four waiver States (Maryland, Massachusetts, New Jersey, and New York) and the three exempt areas (Guam/American Samoa, Puerto Rico, and the Virgin Islands) were issued on April 27. Evaluation of the proposals received resulted in 15 States being determined to have unacceptable responses: Alaska, California, Hawaii, Idaho, Illinois, Maine, Michigan, Ohio,

Oklahoma, Pennsylvania, Texas, Vermont, Virginia, and Washington. Proposals for these areas were resolicited, and negotiations began with the successful offerers.

As stated above, all PRO contracts were signed prior to the legislatively-mandated deadline of November 15, 1984. PRO contract costs ranged from just over \$200,000 in Guam/American Samoa to \$27 million in California.

Table 5.3 presents cumulative data reported through September 30, 1984, on medical review activities by PRO's, as well as by the remaining PSRO's and fiscal intermediaries, in six broad categories:

- Admissions;
- Transfers;
- Transfers from a PPS hospital;
- Admissions within seven calendar days of discharge from a PPS hospital;
- Procedure review;
- Review of outliers; and
- DRG validation.

The numbers contained in Table 5.3 show that medical review entities have been very active under the PPS. One indication of this activity is that, through September 1984, 31 percent of all PPS inpatient admissions have been reviewed. Perhaps more important is that, on a month-to-month basis, this percentage has steadily increased. Many State/Area PRO's have developed specific objectives

TABLE 5.3

**PPS MEDICAL REVIEW ACTIVITY (Cumulative Data Through September 30, 1984)**

**Admission Review**

Number of PPS Inpatient Hospital Admissions	3,627,678
Total Admissions Reviewed for any Reason (including admission sample)	1,110,974
Percentage of PPS Inpatient Hospital Admissions Reviewed	31%
Total Number of PPS Inpatient Hospital Admissions Denied	27,639
Percentage of PPS Inpatient Admissions Denied of Those Reviewed	2.5%

**Transfers**

Number of Psychiatric Unit Transfers Subjected to Medical Review	2,682
Number of Psychiatric Unit Transfers Denied	75
Percentage of Cases Denied	2.8%
Regional Office (RO) Referrals	35
Number of Rehabilitation Transfers Subjected to Medical Review	7,056
Number of Rehabilitation Transfers Denied	457
Percentage of Cases Denied	6.5%
RO Referrals	38
Number of Alcohol/Drug Transfers Subjected to Medical Review	146

Table 5.3 (continued)

**Transfers (Continued)**

Number of Alcohol/Drug Transfers Denied	17
Percentage of Cases Denied	11.6%
RO Referrals	4
Number of Swing Bed Transfers Subjected to Medical Review	2,006
Number of Swing Bed Transfers Denied	104
Percentage of Cases Denied	5.2%
RO Referrals	26

**Transfers From a PPS Hospital**

Number of Transfers from a PPS Hospital to any Other Hospital (PPS or Non-PPS) Reviewed	30,776
Number of Transfers Denied	744
Percentage of Cases Denied	2.4%
RO Referrals	353

**Admissions Within Seven Calendar Days  
of Discharge from a PPS Hospital**

Number of Admissions Within 7 Calendar Days of Discharge	97,262
Number Subjected to Medical Review	84,915
Number of Admissions Within 7 Calendar Days of Discharge Denied	3,234
Percentage of Admissions Denied of Those Reviewed	3.8%
RO Referrals	1,223

Table 5.3 (continued)

Procedure Review

Number of Cases Involving Pacemaker Insertions Subjected to Medical Review	17,601
Number of Cases Involving Pacemaker Insertions Denied	258
Percentage of Pacemaker Insertions Denied	1.5%
Number of Cases Involving Other Procedures Subjected to Medical Review	8,752
Number of Cases Involving Other Procedures Denied	210
Percentage of Cases Denied	2.4%
RO Referrals	22

Review of Outliers

Number of Cases Approved in Day Outlier Category	47,311
Number of Days Approved as Day Outliers	668,881
Number of Days Denied as Day Outliers	79,566
Percentage of Day Outlier Days Denied	10.6%
Number of Cases Approved as Cost Outliers	20,062
Amount of Charges Approved as Cost Outliers	\$145,460,082
Amount of Charges Denied as Cost Outliers	\$ 6,512,237
Percentage of Charges for Cost Outliers Denied	4.3%

Table 5.3 (continued)

**DRG Validation**

Total Number of Random Sample Cases Reviewed	330,167
Number of Cases Reviewed for Other Reasons	402,379
Total Cases Reviewed (all DRG Validations)	732,546

Source: HCFA, Health Standards and Quality Bureau.

involving the reduction of unnecessary Medicare admissions, depending on the extent to which unnecessary admissions are felt to be a problem in those areas. In Tennessee, for example, the PRO determined that it should be able to reduce unnecessary admissions by 13 percent over a 2-year period.

The data for the September 1984 reporting period also indicate a significant increase in the number of procedures reviewed. Over 40 percent of all procedure reviews conducted through September (other than pacemaker reviews) occurred in September, due to the recent initiation of PRO review in several States. In addition to performing other medical review activities, each PRO is required, by contract, to target review on specified elective procedure-related DRG's or DRG groups, where the potential exists for inappropriate utilization or diminishing of quality of care in that State/Area. For example, the Florida PRO has targeted a reduction of 51,000 unnecessary surgical procedures over the next 2 years.

Denial rates also indicate that PRO's are taking an aggressive approach to medical review. Of all inpatient admissions reviewed through September 1984, 2.5 percent were denied. Denial rates were higher for specific types of cases, such as rehabilitation transfers (6.5 percent) and alcohol/drug transfers (11.6 percent).

The percentage of outlier days denied has also been very high, at 10.6 percent, and 4.3 percent of charges for cost outliers have been denied through September 1984.<sup>9</sup> In addition, almost three-quarters of a million cases have been reviewed for

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<sup>9</sup> It should be noted that, in the case of these denial figures, the actual number of true denials reported in any given category of review may be less than is reported, due to decision reversals that result from the reconsideration process.

Also as previously discussed, P.L. 98-21 also requires the periodic recalibration of DRG and resource weight factors. This recalibration is scheduled for FY 1986. The Department is also committed to refining alcohol and drug DRG's. Other possible refinements to present the classification system are currently being examined, as well.

### **Discussion**

The PPS after one year appears to be, by all measures, "up and running." On balance, implementation efforts have proceeded smoothly: the great majority of hospitals have started to operate under the new system, medical review activities have been initiated and have undertaken a sizable volume of case review, and the timely publication of PPS rules and regulations has been accomplished.

Not to be overlooked in this process is the pivotal role played by individual providers and the hospital industry as a whole. In implementing a new approach of the PPS's proportion and depth, the Medicare program has depended to a great extent on the reasonable responses exhibited by both providers and intermediaries, as well as other parties affected by the program. The early impact of the PPS on providers, patients, and other affected parties is the subject of the remainder of this section of the report.

## Chapter 6

### IMPACT ON HOSPITALS

#### Overview

As stated earlier, the primary objective of the PPS is to change the economic incentives facing hospitals under the Medicare program, in order to moderate the increase in Medicare hospital costs. Since hospital incentives are the primary targets of the new system, the earliest and clearest evidence of the impact of the PPS should be provided by an analysis of data on the behavior that hospitals undertake in response to these incentives. This chapter presents some preliminary findings on the impact of the PPS on hospitals during its first months of implementation, based on data available through the Medicare administrative data system described in Chapter 4, as well as from other available sources of current hospital data.

#### Matrix Study Issues

The PPS Study Issue Matrix in Chapter 1 presents a listing of various measures that may be used to determine the impact on hospitals of Medicare prospective payment. The measures contained in this listing, which is reproduced in Table 6.1, represent economic considerations as well as factors concerning the quality of care and access to care, expressed in terms of both anticipated benefits and unintended consequences. Although data are not currently available with which to assess each of these factors, the issues considered in Table 6.1 provide a framework for the

Table 6.1  
PPS STUDY ISSUES:  
IMPACT ON HOSPITALS

Economic Impact

- Anticipated Benefits--  
Shorter hospital stays.  
Fewer unnecessary test and services.  
Specialization--economies of scale.  
Adoption of cost-reducing technology.  
Improvements in hospital management.  
Improvements in hospital administrative data systems.  
Reduction of excess hospital capacity.  
Vertical integration of health care services.
- Unintended Consequences--  
Increases in unnecessary admissions, readmissions, and transfers.  
Increase in hospital case-mix, due to changes in coding procedures--"DRG creep."  
Separate provision of services which previously were considered part of routine inpatient care--"unbundling."  
Increase in "outlier" cases.  
Higher expenditures on "pass-through" cost categories--capital, direct medical education, kidney acquisition.  
Excessive rate of hospital closings.

Impact on Quality of Care

- Anticipated Benefits--  
Specialization--increase in efficiency and proficiency.  
Fewer unnecessary tests and services.  
More selective use of new technology.
- Unintended Consequences--  
Increase in unnecessary admissions.  
Tendency toward premature discharges.  
Decreases in necessary testing and other ancillary services.  
Reluctance to adopt quality-enhancing (but expensive in the short run) technology.

Impact on Access to Care

- Anticipated Benefits--  
Availability of more services on a regional level.  
Shifting of services to more appropriate (and inexpensive) settings.
- Unintended Consequences--  
"Dumping" of high-cost cases.  
Reluctance of hospitals to accept cases in DRG's which are not profitable.

Congressionally-mandated analysis of the impact of the PPS over the next several years.

### **Limitations**

The scope of analysis for this year's report is limited by several considerations, the two most important of which are:

- Implementation status--As reported earlier, October 1984 was the first month in which all participating hospitals were scheduled to be subject to prospective payment. Thus, many hospitals were still adjusting to the new system as of the end of the first reporting period, and many of the long-run (and even many relatively short-run) impacts of the PPS cannot yet be detected.
- Data availability--Given the lag time involved in processing Medicare administrative data,<sup>1</sup> and the additional data processing burden generated by the implementation and refinement of the new payment system and its corresponding data bases, the availability of timely and accurate data is limited.

The analysis presented in future reports should benefit from the more advanced status of PPS implementation and the availability of additional data and studies on the impact of the new system.

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<sup>1</sup> As described in Chapter 4, HCFA has modified its reporting procedures in order to provide more timely data for monitoring the performance of the PPS.

## Chapter Organization

As discussed in Chapter 3, the availability of preliminary descriptive data on a program as significant as the PPS can be valuable as an early indicator of whether the changes desired by its architects and executors are, indeed, occurring. The

findings in this chapter are organized according to the major indicators which are being monitored as the system is implemented, and are presented under the following headings:

- Admissions;
- Length of Stay;
- Case-Mix;
- Most Frequent DRG's;
- Outliers;
- Discharge Status;
- Charges and Payments;
- Cost-Based "Pass-Throughs";
- Hospitals in Waiver States; and
- Other Issues.

Under each heading, where possible, aggregate trends over time are described, followed by a comparison of data (described below) from PPS versus non-PPS bills processed during FY 1984, by hospital group.

## Data Sources

The data from which aggregate indicators are obtained for this chapter are primarily derived from the PATBILL file, which contains patient bills processed by HCFA during FY 1984. This file includes interim bills received from hospitals not covered under the PPS, bills received for patient stays in hospitals with waivers from PPS coverage (see Chapter 2), and bills received for patient stays in types of hospitals specifically excluded from the PPS, as well as PPS bills.

For the analysis by class of hospital, a separate data base was constructed, consisting of bills received as of July 1984 for stays which occurred between October 1983 and June 1984. In order to classify hospitals into the various groups used in the analysis, descriptive data from the 1981 Medicare Cost Reports was required--thus, any hospitals which did not have Medicare Cost Reports on file in 1981 were omitted from the hospital group comparisons. From this set of hospitals, which was that used to establish the original PPS payment rates, types of hospitals which were known to be excluded from coverage under the PPS were omitted. Final bills from the remaining 5,443 hospitals were grouped along several dimensions, as depicted in Table 6.2, to form a special PPS Impact Data Base, describing the first nine months of PPS implementation.

Table 6.3 shows the distribution of hospitals and bills in the PPS Impact Data Base by hospital group. Separate figures are shown for "PPS-eligible" hospitals--that is, hospitals that were subject to inclusion in the new system by the end of FY 1984--and "waiver" hospitals--that is, hospitals that would have been included in

Table 6.2  
DEFINITION OF HOSPITAL GROUPS  
IN THE PPS IMPACT DATA BASE

<u>All Groups</u>		5,443 hospitals
<u>By Census Division</u>		
New England Middle Atlantic South Atlantic East North Central East South Central West North Central West South Central Mountain Pacific		
CT, ME, MA, NH, RI, VT	241 hospitals	
NJ, NY, PA	573 hospitals	
DE, DC, FL, GA, MD, NC, SC, VA, WV	763 hospitals	
IL, IN, MI, OH, WI	877 hospitals	
AL, KY, MS, TN	456 hospitals	
IA, KS, MN, MO, NB, ND, SD	776 hospitals	
AR, LA, OK, TX	767 hospitals	
AZ, CO, ID, MT, NV, NM, UT, WY	346 hospitals	
AK, CA, HA, OR, WA	644 hospitals	
<u>By Urbanicity</u>		
Urban	Location in a metropolitan statistical area	2,819 hospitals
Rural	Location outside of a metropolitan statistical area	2,624 hospitals
<u>By Teaching Status</u>		
Non-Teaching	No interns or residents	4,472 hospitals
Teaching-Low	Ratio of residents per bed less than 0.25	811 hospitals
Teaching-High	Ratio of residents per bed 0.25 or greater	160 hospitals
<u>By Ownership</u>		
Not-for-Profit	Self-reported by hospital <sup>a</sup>	3,112 hospitals
Proprietary	Self-reported by hospital <sup>a</sup>	633 hospitals
Government	Self-reported by hospital <sup>a</sup>	1,698 hospitals

<sup>a</sup>According to 1981 Medicare Cost Report.

Table 6.3

DISTRIBUTION OF HOSPITALS AND BILLS BY HOSPITAL GROUP  
IN THE PPS IMPACT DATA BASE

Group	"PPS-Eligible"		"Waiver"		Combined Total	
	#hospitals	#bills	#hospitals	#bills	#hospitals	#bills
All Groups	4,933	5,754,492	510	936,679	5,443	6,691,171
	%hospitals	%bills	%hospitals	%bills	%hospitals	%bills
<u>By Census Division</u>						
New England	2.7	3.3	21.0	19.6	4.4	5.6
Middle Atlantic	4.5	7.5	68.8	68.2	10.5	16.0
South Atlantic	14.4	19.2	10.2	12.2	14.0	18.2
East North Central	17.8	20.2	0.0	0.0	16.1	17.4
East South Central	9.2	9.5	0.0	0.0	8.4	8.2
West North Central	15.7	10.3	0.0	0.0	14.3	8.9
West South Central	15.5	12.7	0.0	0.0	14.1	11.0
Mountain	7.0	4.4	0.0	0.0	6.4	3.8
Pacific	13.1	12.8	0.0	0.0	11.8	11.0
<u>By Urbanicity</u>						
Urban	48.2	72.1	86.3	92.7	51.8	75.0
Rural	51.8	27.9	13.7	7.3	48.3	25.0
<u>By Teaching Status</u>						
Non-Teaching	84.4	67.1	60.8	46.2	82.2	64.2
Teaching-Low	13.3	28.3	30.8	40.9	14.9	30.1
Teaching-High	2.4	4.6	8.4	12.9	2.9	5.7
<u>By Ownership</u>						
Not-for-Profit	54.6	69.1	82.0	86.6	57.2	71.6
Proprietary	12.1	10.3	7.3	5.3	11.6	9.6
Government	33.4	20.6	10.8	8.1	31.2	18.8

Source: HCFA, Bureau of Data Management and Strategy.

the PPS but for their participation in a HCFA-approved demonstration of alternative payment systems. Table 6.4 further depicts the distribution of PPS bills in our file by hospital group.

#### **Findings**

##### **Admissions**

When P.L. 98-21 was enacted, creating the Medicare Hospital Prospective Payment System, it was anticipated that the new system, in paying on a per case rather than on the previous per diem basis, would provide an incentive for hospitals to increase the volume of admissions. Since each extra admission generates additional revenue for the hospital, it was thought that financial considerations would encourage the admission of any case for which the cost of treatment is expected to be less than the relevant DRG payment rate. In addition, with the average length of hospital stays expected to decrease (see below), an incentive would exist to fill the rising number of empty beds.

For this reason, the Congress mandated that a study be conducted of the impact of the PPS on hospital admissions, and that a report be submitted in December 1985 on "the feasibility of making a volume adjustment in the DRG prospective payment rates or requiring preadmission certification in order to minimize the incentive to increase admissions."<sup>2</sup>

Table 6.5 presents the annual number of Medicare short-stay hospital admissions for the period 1978-84, along with the rate of admissions per thousand

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<sup>2</sup> P.L. 98-21, Section 603(a)(2)(C).

Table 6.4

DISTRIBUTION OF PPS BILLS BY HOSPITAL GROUP  
FROM PPS IMPACT DATA BASE

<u>Group</u>	<u>PPS Bills as a Percentage of "PPS-Eligible" Bills</u>	<u>Percentage of PPS Bills in Each Group</u>
<u>All Groups</u>	41.2	100.0
<u>By Census Division</u>		
New England	81.5	6.6
Middle Atlantic	1.2	0.2
South Atlantic	58.5	27.2
East North Central	43.2	21.2
East South Central	36.9	8.5
West North Central	38.0	9.5
West South Central	39.4	12.2
Mountain	33.9	3.6
Pacific	35.0	10.9
<u>By Urbanicity</u>		
Urban	39.7	69.6
Rural	44.8	30.4
<u>By Teaching Status</u>		
Non-Teaching	42.9	69.8
Teaching-Low	40.0	27.6
Teaching-High	23.3	2.6
<u>By Ownership</u>		
Not-for-Profit	41.1	69.0
Proprietary	32.3	8.1
Government	45.9	23.0

Source: HCFA, Bureau of Data Management and Strategy.

Table 6.5

**MEDICARE SHORT-STAY HOSPITAL ADMISSIONS  
AND RATE PER THOUSAND HOSPITAL INSURANCE ENROLLEES  
1978-84**

<u>Year</u>	<u>Admissions (in thousands)</u>	<u>Percent Change</u>	<u>Enrollment as of July 1 (in thousands)</u>	<u>Admissions Per Thousand Enrollees</u>	<u>Percent Change</u>
CY 1978	9,444	---	26,777	353	---
CY 1979	9,788	+3.6	27,459	356	+0.8
CY 1980	10,430	+6.6	28,067	372	+4.5
CY 1981	10,858	+4.1	28,590	380	+2.2
FY 1982	11,220	+3.3	29,069	386	+1.6
FY 1983	11,696	+4.2	29,587	395	+2.3
FY 1984	11,495 <sup>a</sup>	-1.7	30,141 <sup>b</sup>	381	-3.5

<sup>a</sup> Admissions data for FY 1984, adjusted to account for processing lags.

<sup>b</sup> Enrollment figures for July 1, 1984, as projected by HCFA's Bureau of Data Management and Strategy.

Source: HCFA, Bureau of Data Management and Strategy.

Medicare Hospital Insurance enrollees. As this table shows, Medicare admissions were steadily rising over the entire period prior to the implementation of the PPS, with the annual increase never falling below 3.3 percent. The figures for FY 1984, however, indicate a decrease in admissions of 1.7 percent--quite contrary to a priori expectations, as well as previous experience. Furthermore, when the growth in the beneficiary population is taken into account, the FY 1984 decrease (in admissions per thousand enrollees) is 3.5 percent.

Figure 6.1, based on data from the American Hospital Association (AHA), compares seasonally-adjusted monthly admission patterns over a two-year period for patients aged 65 and over and those under age 65. These patterns show that, while admissions were declining almost continuously for the younger group, the level of admissions among the older group has been fairly constant since early in 1983--with the exception of a slight decrease coinciding with the implementation of the PPS.

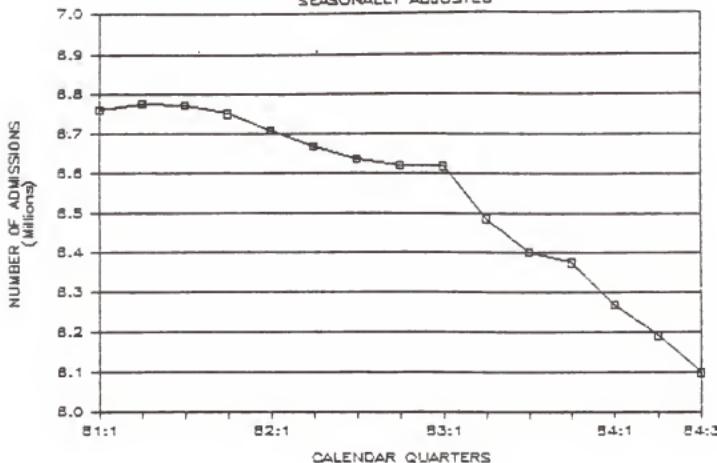
It thus appears from the available data that the increase in admissions that was anticipated in response to the PPS has not yet materialized. While patients aged 65 and over comprise an increasing proportion of total admissions, the numbers of admissions for both the younger and the older group are declining. Future reports in this series will continue to monitor admission trends under prospective payment. In addition, analysis will focus on admission patterns among various classes of hospitals,<sup>3</sup> and on the determinants of these admission patterns.

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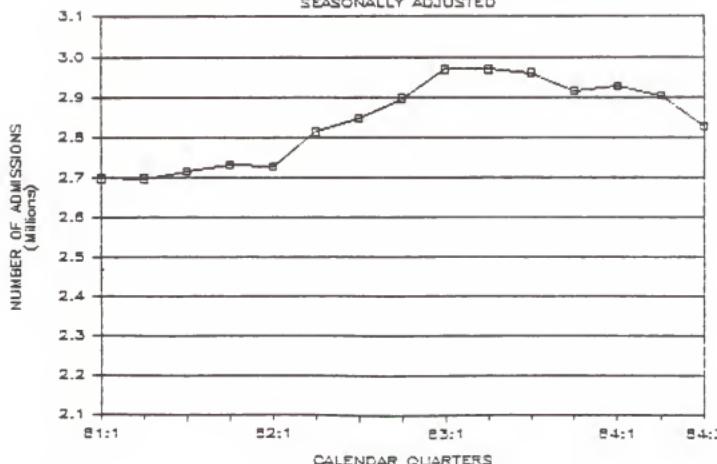
<sup>3</sup> Such an analysis could not be done with the data currently available, because admission notice data cannot be disaggregated by type of hospital, and there is no way to calculate an appropriate denominator for admission rates by type of hospital.

Figure 6.1  
SEASONALLY-ADJUSTED ADMISSION TRENDS

UNDER AGE 65 ADMISSIONS  
SEASONALLY ADJUSTED



AGE 65 AND OVER ADMISSIONS  
SEASONALLY ADJUSTED



Source: Trends, Dec. 1984. Copyright 1984 by the American Hospital Association. For more information about AHA data, call (312) 280-6531.

### **Length of Stay**

The most commonly accepted expectation about the PPS at the time of its inception was that it would result in shorter stays for Medicare patients. As discussed in Chapter 2, the hospital stay was chosen as the unit of payment for the new system in order to avoid the incentive to prolong inpatient treatment, which per diem payment would have encouraged. Thus, reduced length of stay was to be one of the major vehicles through which hospital costs were to be controlled under the PPS.

Table 6.6 presents annual data on average length of stay for Medicare beneficiaries from 1967 to the present. As is shown by these data, Medicare length of stay had been steadily declining over the 15-year period prior to the PPS, and the decline during FY 1983 (when TEFRA provisions were in effect) was the largest drop in Medicare length of stay in the previous ten years.

The drop in Medicare length of stay during FY 1984, however, indicates a dramatic change in hospital behavior, when compared to the pre-PPS rate of decline--while the largest annual decline over the previous 15 years was less than four percent, Medicare length of stay fell by 9.0 percent during the first year under the PPS. In absolute terms, length of stay declined by almost one full day in FY 1984, compared to the largest pre-PPS drop of only one-half day.

Figure 6.2 graphically depicts this downward trend in Medicare length of stay. As shown in this figure, the actual length of stay for FY 1984 (9.1 days) is substantially lower than the length of stay that would have been

Table 6.6

AVERAGE LENGTH OF STAY FOR MEDICARE BENEFICIARIES  
IN SHORT-STAY HOSPITALS  
1967-84

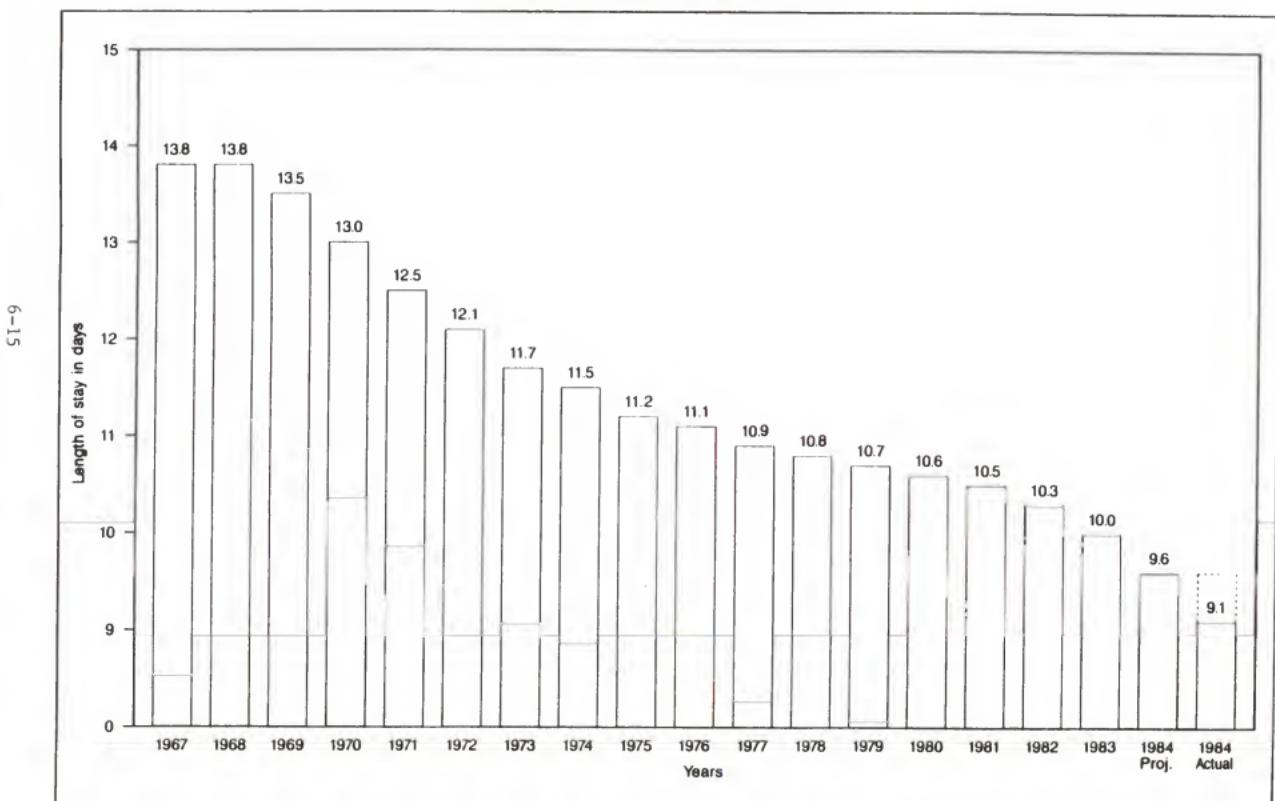
<u>Year</u>	<u>Average Length of Stay<sup>a</sup></u>	<u>Percent Change</u>
CY 1967	13.8	---
CY 1968	13.8	0.0
CY 1969	13.5	-2.2
CY 1970	13.0	-3.8
CY 1971	12.5	-3.9
CY 1972	12.1	-3.2
CY 1973	11.7	-3.3
CY 1974	11.5	-1.7
CY 1975	11.2	-2.6
CY 1976	11.1	-0.9
CY 1977	10.9	-1.8
CY 1978	10.8	-0.9
CY 1979	10.7	-0.9
CY 1980	10.6	-0.9
FY 1981	10.5	-0.9
FY 1982	10.3	-1.9
FY 1983	10.0	-2.9
FY 1984	9.1 <sup>b</sup>	-9.0

<sup>a</sup>Data for CY 1967-80 refer to aged beneficiaries only. The omission of other Medicare beneficiaries may result in an overstatement of approximately 0.1 days in annual length of stay for these years in this table.

<sup>b</sup>Based on records processed through September 1984.

Source: HCFA, Bureau of Data Management and Strategy.

Figure 6.2  
Medicare length of stay: 1967-84



projected from previous experience (9.6 days). Using standard estimation techniques,<sup>4</sup> this difference can be shown to be statistically significant at a 95 percent level of confidence.

The drop in length of stay during FY 1984 appears even more dramatic when it is noted that, due to the gradual implementation of the PPS during its first year, less than 40 percent of all short-stay hospital bills were subject to prospective payment. The figures cited above may partially reflect an anticipatory reduction in lengths of stay at hospitals that, while not yet covered under the new payment system, attempt to adjust their behavior in advance to PPS incentives.<sup>5</sup> In any case, to the extent that the PPS is behind this acceleration in the decline of Medicare length of stay, its effect should become even more evident during FY 1985, when all participating hospitals will be operating under the new system.

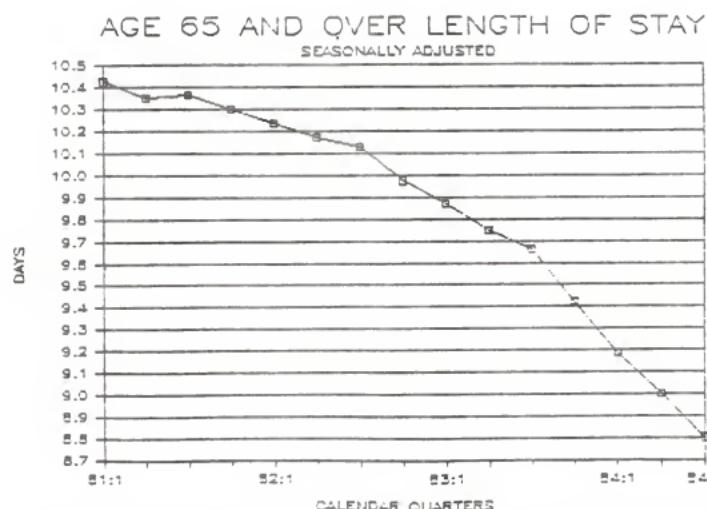
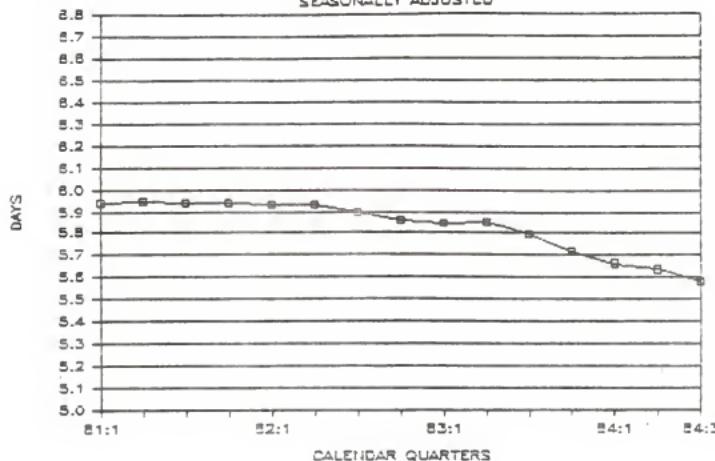
An examination of AHA data by patient group indicates that the recent drop in length of stay appears to be much steeper among the Medicare-eligible population than among younger patients. Figure 6.3 compares seasonally-adjusted trends in average length of stay over a two-year period for patients aged 65 and over with patients under age 65. As this figure shows, while there has been a slight but steady drop in length of stay for the younger group, the older group has shown a much more dramatic decline, which dates back to around the time of the passage of the PPS

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<sup>4</sup> Regression analysis was used to estimate a simple time trend, with the natural logarithm of length of stay as the dependent variable. Using a one-tailed test of significance at a confidence level of 95 percent, the actual figure of 9.1 days was found to be significantly lower than the projected figure of 9.6 days.

<sup>5</sup> An assessment of this anticipatory effect might be conducted by examining the behavior of each hospital before the enactment of the PPS, before its coverage under the new system, and after it became subject to prospective payment. Such an analysis will be attempted when the appropriate data become available.

Figure 6.3  
 SEASONALLY-ADJUSTED LENGTH OF STAY TRENDS  
 UNDER AGE 65 LENGTH OF STAY  
 SEASONALLY ADJUSTED



Source: *Trends*, Dec. 1984. Copyright 1984 by the American Hospital Association. For more information about AHA data, call (312) 280-6531.

legislation in April of 1983.

The most direct method of obtaining evidence of the impact of any policy on hospital behavior would be to compare the simultaneous behavior of two groups of hospitals over time--one group subject to the policy in question, and the other exempt from the policy, but otherwise identical to the first group. Such an experiment is impossible to conduct in the case of the PPS, given the system's almost universal coverage of short stay hospitals. However, since the PPS was phased in during FY 1984, a comparison can be made of data from PPS bills (i.e., bills subject to payment under the PPS) with data from non-PPS bills (i.e., bills for stays occurring at "PPS-eligible" hospitals before they became subject to the PPS). As noted above, these figures would tend to underestimate the impact of the PPS, since the prospect of imminent coverage under the new system may affect hospital behavior even before the hospital enters the system.

Table 6.7 compares FY 1984 Medicare average length of stay figures for PPS and complete non-PPS short-stay hospital bills in the PPS Impact Data Base.<sup>6</sup> It should be noted that each of these sets of bills was received from essentially the same group of hospitals--those hospitals that are subject to coverage under the PPS.

The data shown in Table 6.7 further support the hypothesis that prospective payment leads to shorter Medicare hospital stays. Overall, length of stay is an

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<sup>6</sup> In order to maximize the analytical comparability of the PPS and non-PPS groups, only complete bills are included in the PPS Impact Data Base. The omission of interim bills probably results in a substantial understatement of average length of stay for non-PPS bills. In addition, the exclusion of bills from hospitals excluded from PPS coverage (such as excepted types of hospitals and hospitals in waiver States) may result in discrepancies between some of the figures derived from this data base and the figures available from other sources.

Table 6.7

AVERAGE LENGTH OF STAY FOR PPS VS. COMPLETE NON-PPS BILLS  
IN THE PPS IMPACT DATA BASE

<u>Group</u>	Average Length of Stay <u>PPS Bills</u>	Average Length of Stay <u>Non-PPS Bills</u>	Percent <u>Difference</u>
<u>All Groups</u>	7.5	8.2	-8.5
<u>By Census Division</u>			
New England	8.6	7.8	+11.6
Middle Atlantic	8.5	9.5	-10.5
South Atlantic	7.6	8.4	-9.5
East North Central	8.2	8.9	-7.9
East South Central	7.5	8.3	-9.6
West North Central	7.2	8.0	-10.0
West South Central	7.1	7.8	-9.0
Mountain	6.5	7.2	-9.7
Pacific	6.4	6.7	-4.5
<u>By Urbanicity</u>			
Urban	7.8	8.5	-8.2
Rural	6.8	7.4	-8.1
<u>By Teaching Status</u>			
Non-Teaching	7.2	7.8	-7.7
Teaching-Low	8.3	9.0	-7.8
Teaching-High	8.4	8.8	-4.5
<u>By Ownership</u>			
Not-for-Profit	7.7	8.5	-9.4
Proprietary	7.1	7.5	-5.3
Government	7.1	7.6	-6.6

Source: HCFA, Bureau of Data Management and Strategy.

average of 8.5 percent shorter for PPS bills.<sup>7</sup> By census division, the differential between PPS and non-PPS length of stay is between 0.7 and 0.8, except for three regions. These regions are:

- New England, in which almost all of the "PPS-eligible" short stay hospitals were covered by the system immediately, so that the non-PPS comparison group is very small and, thus, provides a less reliable indicator of non-PPS behavior (only 18 percent of the analyzed bills from this region were non-PPS bills, compared with 59 percent nation-wide);
- The Middle Atlantic, which consists of two waiver states--New York and New Jersey--and Pennsylvania--where most hospitals were not under prospective payment until July 1, 1984 (therefore, only 1.2 percent of the analyzed bills from this region were PPS bills); and
- The Pacific, which had the shortest average length of stay prior to the PPS (1.5 days below the national average in FY 1983), and so--it may be argued--had less room for improvement in this area.

Stays at urban hospitals are about one day longer than those at rural hospitals.

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<sup>7</sup> As mentioned above, the PPS Impact Data Base probably understates the difference between PPS and non-PPS lengths of stay. Preliminary figures on PPS versus non-PPS stays--rather than bills--indicate a PPS/non-PPS difference of 14.4 percent.

As would be expected, the average length of stay in non-teaching hospitals, both for PPS and for non-PPS bills, is more than a day shorter than in teaching hospitals. However, in teaching hospitals with high concentrations of residents, stays do not seem to be as greatly affected by the PPS. This may be due to a somewhat slower rate of PPS implementation among these hospitals (only 23 percent of the analyzed bills in this group were PPS bills, compared with 41 percent for all hospitals).

Disaggregation by ownership status reveals that stays at not-for-profit hospitals are slightly longer than those at proprietary or government hospitals. Not-for-profit hospitals also have the greatest difference in length of stay among the ownership groups, while proprietary hospitals were apparently the least affected by the PPS.

Future reports will continue to monitor the impact of the PPS on length of stay. The availability of more complete data should allow for the analysis of several dimensions of this issue, which would enable us to determine more rigorously the magnitude and causality of observed changes, and to more confidently predict future trends.<sup>8</sup>

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<sup>8</sup> See the discussion of this issue in Chapter 3.

## Case-Mix

The Medicare Case-Mix Index (CMI) is a measure of hospital resources used in the treatment of Medicare patients. It is based on the relative weights for each DRG, computed from data in the 1981 MEDPAR file,<sup>9</sup> with these relative weights standardized so that the average hospital in the sample had a 1981 CMI of 1.0000. This hospital-weighted CMI thus compares the resources used to treat Medicare patients in each hospital relative to the per-hospital average for the sample. The hospital-weighted CMI for any group of hospitals compares the per-hospital average for that group with the per-hospital average for the entire sample.

Alternatively, a case-weighted CMI may be computed, which compares the relative weight for each case to that for the average of all cases in the sample, regardless of the distribution of cases by hospital.<sup>10</sup> The case-weighted CMI for any group of hospitals thus compares the average for cases in that group with the per-case average for the entire sample.

If case-mix were randomly distributed by hospital, then the hospital-weighted CMI and the case-weighted CMI for each group would be the same. However, case-mix is not randomly distributed--larger hospitals tend to have higher CMI's. Therefore, one would expect the case-weighted CMI to be greater than the

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<sup>9</sup> The MEDPAR file contains hospital bills for a 20 percent sample of Medicare beneficiaries.

<sup>10</sup> Another way of looking at the case-weighted CMI is that it is computed as though all cases in the sample were treated at one very large hospital, rather than at thousands of individual hospitals, each with its own unique case mix.

hospital-weighted CMI. In 1981, the national case-weighted CMI was 1.0540, while (using the same relative weights) the national hospital-weighted CMI was--by definition--1.0000. In this chapter, the case-weighted CMI is used, rather than the hospital-weighted CMI, because the focus of our analysis is on the average case in each hospital group. In either instance, the importance of the index is to provide a basis for comparison between groups of hospitals or cases, rather than an absolute level of case-mix.

Table 6.8 illustrates the case-weighted CMI for various hospital groups, calculated by applying the FY 1984 DRG relative weights to data from the PPS

Impact Data Base described earlier in this chapter. As this table shows, the CMI for PPS bills is two percent higher than that for non-PPS bills. Since both the PPS and the non-PPS data in Table 6.8 are taken from bills received from hospitals in each group during FY 1984, any time trend is unlikely to have influenced this difference. Thus, it may be that the difference in case-mix between PPS and non-PPS hospital bills reflects PPS incentives to alter admissions or coding practices.<sup>11</sup>

By census division, the CMI for PPS bills ranges from 1.0501 in the East South Central region to 1.1785 in the Pacific. The largest difference between PPS and non-PPS bills, 7.9 percent, was in New England--where most hospitals came under the PPS very early. This may indicate that greater experience with the PPS leads to larger increases in the CMI, either because of actual differences in the types of

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<sup>11</sup> As discussed above, since the Medicare payment received by the hospital under the PPS is tied to its case-mix, there is an incentive for the hospital to adapt its coding procedures so as to place each patient in the highest-paying DRG possible. See Chapter 2 for a discussion of PPS incentives.

Table 6.8  
CASE-WEIGHTED CMI BY HOSPITAL GROUP  
FROM PPS IMPACT DATA BASE

<u>Group</u>	Case-Weighted CMI		<u>Percent Difference</u>
	<u>PPS Bills</u>	<u>Non-PPS Bills</u>	
<u>All Groups</u>	1.1170	1.0950	+2.0
<u>By Census Region</u>			
New England	1.1570	1.0718	+7.9
Middle Atlantic	1.1385	1.1111	+2.5
South Atlantic	1.1164	1.1033	+1.2
East North Central	1.1082	1.0916	+1.5
East South Central	1.0501	1.0567	-0.6
West North Central	1.1201	1.0867	+3.1
West South central	1.0949	1.0746	+1.9
Mountain	1.1382	1.1086	+2.7
Pacific	1.1785	1.1268	+4.5
<u>By Urbanicity</u>			
Urban	1.1545	1.1241	+2.7
Rural	1.0313	1.0130	+1.8
<u>By Teaching Status</u>			
Non-Teaching	1.0794	1.0588	+1.9
Teaching-Low	1.1934	1.1533	+3.5
Teaching-High	1.3191	1.2111	+8.9
<u>By Ownership</u>			
Not-for-Profit	1.1380	1.1134	+2.2
Proprietary	1.0947	1.0543	+3.8
Government	1.0603	1.0532	+0.7

Source: HCFA, Bureau of Data Management and Strategy.

cases treated, or because of changes in coding practices.

Urban hospitals appear to have a higher average CMI--and also a slightly greater difference between PPS and non-PPS hospitals--than do rural hospitals.

By teaching status, the CMI for PPS bills varies from 1.0794 for non-teaching hospitals to 1.3194 for teaching hospitals with a heavy concentration of residents. Teaching hospitals had much larger differences in CMI between PPS and non-PPS bills than did non-teaching hospitals, with the "teaching-high" group having a difference of 8.9 percent--almost five times as great as that for non-teaching hospitals.

By ownership, non-profit hospitals had the highest CMI, while the proprietary group had the greatest difference between PPS and non-PPS bills. Government hospitals had both the lowest CMI and the smallest difference between PPS and non-PPS bills.

#### Most Frequent DRG's

As has been noted above, the CMI is somewhat higher among the PPS bills paid during the first months of the new system than it was among the 1981 records from which the initial PPS payment rates were derived. Table 6.9 focuses on individual DRG's, in an attempt to trace the pattern of case types before and under the PPS. This table presents the 25 most frequently reported DRG's among PPS bills contained in the PATBILL file as of September 28, 1984, their ranks in the 1981 MEDPAR file, their relative weights, and the percentage of bills accounted for by each DRG in 1981 and among PPS bills in FY 1984.

Table 6.9

MOST FREQUENT DRG'S IN THE 1981 MEDPAR FILE  
AND AMONG PPS BILLS IN THE FY 1984 PATBILL FILE

FY 1984 Rank	1981 Rank	DRG#	Relative Weight	FY 1984 Share	1981 Share
1	1	127	1.0408	4.8	3.9
2	4	039	0.5010	3.7	3.4
3	2	182	0.6185	3.7	3.8
4	7	089	1.1029	3.2	2.4
5	6	014	1.3527	3.0	2.7
6	11	140	0.7548	2.9	1.9
7	5	088	1.0412	2.1	2.7
8	12	243	0.7551	2.0	1.9
9	13	138	0.9297	2.0	1.5
10	16	096	0.7996	1.8	1.3
11	15	015	0.6673	1.7	1.3
12	21	296	0.8979	1.7	1.7
13	25	336	1.0079	1.5	0.9
14	a	122	1.3651	1.4	a
15	26	209	2.2912	1.4	0.9
16	23	174	0.9281	1.4	1.0
17	10	294	0.8087	1.3	2.0
18	19	320	0.8123	1.3	1.1
19	8	468	2.1037	1.2	2.3
20	32	210	2.0833	1.1	0.6
21	a	121	1.8648	1.1	a
22	18	082	1.1400	1.0	1.3
23	3	132	0.9182	1.0	3.6
24	38	148	2.5493	1.0	0.7
25	45	087	1.5529	0.9	0.5
26	20	130	0.9645	0.9	1.1
28	24	395	0.7839	0.8	1.0
30	22	183	0.5652	0.7	1.0
34	14	134	0.7049	0.7	1.4
164	17	467	0.9799	0.1	1.3

<sup>a</sup>DRG's 121 and 122 were combined in the 1981 listing; this combined DRG ranked 9th and accounted for 2.0 percent of all bills.

Source: HCFA, Bureau of Data Management and Strategy.

Four of the current top 25 DRG's were not among the top 25 in 1981. They are:

- DRG 209--Major Joint Procedures, with a relative weight of 2.2912 (26th in 1981; 15th among PPS bills);
- DRG 210--Hip and Femur Procedures Except Major Joint, Age Over 69 and/or Complicating Conditions, with a relative weight of 2.0833 (32nd in 1981; 20th among PPS bills);
- DRG 148--Major Small and Large Bowel Procedures, Age Over 69 and/or Complicating Conditions, with a relative weight of 2.5493 (38th in 1981; 24th among PPS bills); and
- DRG 087--Pulmonary Edema and Respiratory Failure, with a relative weight of 1.5529 (45th in 1981; 25th among PPS bills).

In addition, while DRG 122 (Circulatory Procedures with Acute Myocardial Infarction Without Cardiovascular Complications, Discharged Alive) was listed as the ninth most prevalent DRG in 1981, accounting for two percent of all bills in the MEDPAR file, it was combined with DRG 121 (same as DRG 122, but With Cardiovascular Complications) in that listing. Currently, DRG 122 ranks 15th among PPS bills, while DRG 121 ranks 21st. Together, these two DRG's account for 2.5 percent of all PPS bills.

Large jumps in rank and/or share occurred for several other DRG's, including:

- DRG 127--Heart Failure and Shock (1st in rank in both years; from 3.9 to 4.8 percent in share);

- DRG 089--Simple Pneumonia and Pleurisy, Age Over 69 and/or Complicating Conditions (from 7th to 4th in rank; from 2.4 to 3.2 percent in share);
- DRG 140--Angina Pectoris (from 11th to 6th in rank; from 1.9 to 2.9 percent in share);
- DRG 096--Bronchitis and Asthma, Age Over 69 and/or Complicating Conditions (from 16th to 10th in rank; from 1.3 to 1.8 percent in share);
- DRG 296--Nutritional and Miscellaneous Metabolic Disorders, Age Over 69 and/or Complicating Conditions (from 21st to 12th in rank; from 1.1 to 1.7 percent in share);
- DRG 336--Transurethral Prostatectomy, Age Over 69 and/or Complicating Conditions (from 25th to 13th in rank; from 0.9 to 1.5 percent in share); and
- DRG 174--Gastrointestinal Hemorrhage (from 23rd to 16th in rank; from 1.0 to 1.4 in share);

Table 6.9 also lists five DRG's that were among the top 25 in 1981, but did not maintain their ranking among PPS bills:

- DRG 130--Peripheral Vascular Disorders, Age Over 69 and/or Complicating Conditions, with a relative weight of 0.9645 (falling from 20th in 1981 to 26th among PPS bills);
- DRG 395--Red Blood Cell Disorders, Age Over 17, with a relative weight of 0.7839 (falling from 24th in 1981 to 28th among PPS bills);

- DRG 183--Esophagitis, Gastroenteritis, and Miscellaneous Digestive Diseases, with a relative weight of 0.5652 (falling from 22nd in 1981 to 30th among PPS bills);
- DRG 134--Hypertension, with a relative weight of 0.7049 (falling from 14th in 1981 to 34th among PPS bills); and
- DRG 467--Other Factors Influencing Health Status, with a relative weight of 0.9799 (falling from 17th in 1981 to 164th among PPS bills).

Large declines in rank and/or share also occurred for the following DRG's:

- DRG 294--Diabetes, Age Over 35 (from 10th to 17th in rank; from 2.0 to 1.3 percent in share);
- DRG 468--Unrelated Operating Room Procedure (from 8th to 19th in rank; from 2.3 to 1.2 percent in share); and
- DRG 132--Atherosclerosis, Age Over 69 and/or Complicating Conditions (from 3rd to 23rd in rank; from 3.6 to 1.0 percent in share).

Table 6.10 lists the DRG's which were among the top 25 in either 1981 or among PPS bills, by the sizes of their relative gains or declines in share. As this table shows, 17 of these DRG's increased their share of bills accounted for. Of these 17 DRG's, five involved surgical procedures, three had very high relative weights (over 2.0000), and eight had relative weights under 1.0000. Of the 11 DRG's which declined in share, none involved surgical procedures, only one had a relative weight greater than 2.0000, and eight had relative weights under 1.0000.

Table 6.10

CHANGES IN SHARE OF TOTAL CASES,  
DRG'S AMONG TOP 25 IN 1981 AND/OR AMONG PPS BILLS

DRG	Type	Increased Shares <sup>a</sup>		DRG	Decreased Shares	
		Change	Relative Weight		Type	Change
140	Med	1.0	0.7548	132	Med	-2.6
127	Med	0.9	1.0408	467	Med	-1.2
089	Med	0.8	1.1029	468	-	-1.1
296	Med	0.6	0.8972	134	Med	-0.7
336	Surg	0.6	1.0079	294	Med	-0.7
138	Med	0.5	0.9297	088	Med	-0.6
096	Med	0.5	1.1252	183	Med	-0.3
209	Surg	0.5	2.2912	082	Med	-0.3
210	Surg	0.5	2.0833	395	Med	-0.2
015	Med	0.4	0.6673	130	Med	-0.2
174	Med	0.4	0.9281	182	Med	-0.1
087	Med	0.4	1.5529			
039	Surg	0.3	0.5010			
014	Med	0.3	1.3527			
148	Surg	0.3	2.5493			
320	Med	0.2	0.8123			
243	Med	0.1	0.7551			

<sup>a</sup> DRG's 121 and 122 were combined in 1981, together accounting for 2.0 percent of the 1981 MEDPAR bills. Their combined share of PPS bills is 2.5 percent.

Source: HCFA, Bureau of Data Management and Strategy.

The analysis of the most frequent DRG's in 1981 and among PPS bills can thus shed some light on shifts in the pattern of case types treated under the PPS. Several such shifts are indicated by these data:

- Among this group of most frequent DRG's, all five DRG's which involve admissions for surgical procedures increased their shares under the PPS.
- Of the four DRG's in this group with very high relative weights, three increased their shares under the PPS--the only such DRG to decrease its share under the PPS was DRG 468, which was expected to decrease in frequency as the amount and accuracy of information on diagnoses and surgical procedures increased.
- Of the 11 DRG's which experienced declines in their shares, eight had low relative weights.

Some evidence thus appears that hospital case-mixes may be changing under the PPS. The extent to which these changes are due to increases in coding precision or due to real changes in the types of cases treated will become clearer as the analysis of this issue continues over time.

#### **Outliers**

As described in Chapter 2, outliers are atypical cases that require exceptionally long inpatient stays or generate extraordinarily high costs when compared to the overall distribution of cases in the same DRG. Since payment under the PPS is based on the resources required by the average case in each DRG, it was recognized

at the outset that some allowance would have to be made for these atypical cases. Two types of outlier cases were defined: day outliers, which exceed a threshold based on the distribution of length of stay for cases in the DRG; and cost outliers, which exceed a threshold based on the Federal payment rate for the DRG. Cases which qualify as day outliers cannot be classified as cost outliers.<sup>12</sup>

Table 6.11 shows the cumulative number of outliers reported at the end of each month by the fiscal intermediaries. As this table shows, the proportion of PPS cases reported to be outliers was initially fairly small, but started to grow as the early outlier cases began to proceed through the reporting system. By the end of September 1984, outliers comprised 2.1 percent of all PPS cases reported by the fiscal intermediaries.

Initially, both the hospital-specific and Federal portions of the prospective payment rates were adjusted for projected outlier payments. However, in the publication of the final rule for FY 1984 in the Federal Register on January 3, 1984 (49 FR 234), this adjustment was restricted to the Federal portion only. The calculation of projected outlier payments as a percentage of total prospective payments for FY 1984, then, involves a weighted average of two percentages. This calculation is described in Table 6.12. Based on this calculation, outlier payments would have been projected to comprise 2.2 percent of total PPS payments during the first year of the PPS, with day outliers accounting for 1.9 percent and cost outliers accounting for 0.3 percent.

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<sup>12</sup> For a more specific definition of these thresholds, see Chapter 2.

Table 6.11

OUTLIER CASES REPORTED BY FISCAL INTERMEDIARIES,  
CUMULATIVE BY MONTH

Month	Total PPS Bills	Day Outliers		Cost Outliers		Total Outliers	
		Number	PCT	Number	PCT	Number	PCT
March 1984	1,290,912	12,258	0.9	3,488	0.3	15,746	1.2
April 1984	1,654,517	19,230	1.2	5,382	0.3	24,612	1.5
May 1984	2,059,803	27,215	1.3	7,129	0.3	34,344	1.7
June 1984	2,483,247	36,781	1.5	9,501	0.4	46,282	1.9
July 1984	3,061,720	47,981	1.6	13,103	0.4	61,084	2.0
August 1984	3,687,655	57,616	1.6	15,626	0.4	73,242	2.0
September 1984	4,305,830	70,195	1.6	20,585	0.5	90,780	2.1

Source: HCFA, Bureau of Program Operations.

Table 6.12

**OUTLIER PAYMENTS AS A PERCENTAGE OF TOTAL PPS PAYMENTS  
ACTUAL VS. PROJECTED, FY 1984  
(BILLS PROCESSED THROUGH NOVEMBER 1984)**

Calculating Projected Outlier Payments

1. PPS bills paid for discharges between October 1983 and January 1984--\$2,361,976.
2. Outlier payments as a percentage of total PPS payments, from bills paid for discharges between October 1, 1983 and February 2, 1984--5.7% times 100% (adjustment applies to both hospital-specific and Federal portions).
3. PPS bills paid for discharges between February 1984 and September 1984--\$10,485,309.
4. Outlier payments as a percentage of total PPS payments, from bills paid for discharges between February 3, 1984 and September 30, 1984--5.7% times 25% (adjustment applies to Federal portion only).
5. Total PPS bills paid for discharges during FY 1984--\$12,847,285.
  - o Percentage PPS bills paid October through January:  $(\$2,361,976/\$12,847,285) = 18.4\%$ .
  - o Percentage PPS bills paid February through September:  $(\$10,485,309/\$12,847,285) = 81.6\%$ .
6. Outlier payments as a percentage of total PPS payments--projected:  
 $(18.4\%) \times (5.7\%) + (81.6\%) \times (5.7\%) \times (25\%) = 2.2\%$
7. Projected day outlier payments as a percentage of total outlier payments--85%; as a percentage of total PPS payments-- $(85\%) \times (2.2\%) = 1.9\%$ .
8. Projected cost outlier payments as a percentage of total outlier payments--15%; as a percentage of total PPS payments-- $(15\%) \times (2.2\%) = 0.3\%$ .

Actual vs. Projected Outlier Payments

	<u>Actual</u>	<u>Projected</u>
Day outlier payments as a percentage of total PPS payments	0.6%	1.9%
Cost outlier payments as a percentage of total PPS payments	0.2%	0.3%
Total outlier payments as a percentage of total PPS payments	0.8%	2.2%

Sources: HCFA, Bureau of Data Management and Strategy.

According to patient bill records processed through November 1984, actual outlier payments (over and above the basic prospective payments for outlier cases) comprise 0.8 percent of total PPS payments for FY 1984, with day outliers accounting for 0.6 percent and cost outliers accounting for 0.2 percent. These figures, as shown in Table 6.12, would seem to indicate that outlier payments, particularly for day outlier cases, are substantially lower than would have been projected. It must be pointed out, however, that these figures are preliminary, since data for FY 1984 are not yet complete, and probably substantially understate the number of outliers. Moreover, since all outlier cases are subject to the PRO review process, the outstanding data most likely contain a disproportionate number of outlier cases. Nonetheless, it appears that outlier payments for the first year of the PPS are below projected levels.

Preliminary analysis indicates that this discrepancy between projected and actual outlier payments is largely due to the decline in length of stay in recent years and the decrease in charges per case under the PPS. For cases actually classified as outliers, however, it appears that the additional outlier payment per case is about what would have been expected from the original projection.

As alluded to above, data reporting lags are particularly relevant to the analysis of outliers under the PPS. Through September 1984, only 1.6 percent of all PPS bills in the PATBILL file were classified as outliers, compared with the 2.1 percent figure reported by the fiscal intermediaries (see Table 6.11). Furthermore, since the PPS Impact Data Base used in this chapter was based on PATBILL cases processed

through July of 1984, the outlier count in this file is only 1.3 percent. However, although it probably suffers from a severe underrepresentation of outliers, this file can be used to give a preliminary indication of the distribution of outliers by hospital group. Table 6.13 presents these figures.

The distribution of outliers by census region ranges from 2.3 percent in New England to 0.5 percent in the Mountain States. At present, it is unclear whether these figures represent the actual distribution of outlier cases or some regional variation in the processing of these cases. The Pacific region, however, appears to have a disproportionate number of cost outliers--almost 50 percent of all outliers in this region are cost outliers. This may reflect the high per-diem costs characteristic of the Pacific region.

Outlier cases are about twice as common at urban hospitals as they are at rural hospitals--although this may reflect reporting lags for the rural hospitals. The ratio of day to cost outliers is about three to one in both urban and rural areas.

Teaching status has the expected correlation with the proportion of outliers--non-teaching hospitals, which are presumed to treat less complex cases, have only about half as many outliers per hundred PPS cases as do teaching hospitals.

#### **Discharge Status**

With the advent of the PPS, Medicare payment for inpatient operating costs is limited to the prospectively determined rate for each case. As stated above, this

Table 6.13  
 DISTRIBUTION OF OUTLIER CASES BY HOSPITAL GROUP  
 PPS IMPACT DATA BASE

<u>Group</u>	<u>Total PPS Bills</u>	<u>Percent Day Outliers</u>	<u>Percent Cost Outliers</u>	<u>Percent Total Outliers</u>
<u>All Groups</u>	2,368,487	1.0	0.3	1.3
<u>By Census Division</u>				
New England	155,944	2.0	0.3	2.3
Middle Atlantic	5,038	1.6	0.1	1.7
South Atlantic	645,367	1.1	0.4	
East North Central	502,710	1.1	0.3	1.5
East South Central	202,354	1.1	0.4	1.4
West North Central	224,891	0.8	0.3	1.1
West South Central	288,837	0.8	0.1	0.9
Mountain	86,352	0.3	0.2	0.5
Pacific	256,994	0.6	0.6	1.2
<u>By Urbanicity</u>				
Urban	1,648,742	1.2	0.4	1.6
Rural	719,745	0.6	0.2	0.8
<u>By Teaching Status</u>				
Non-Teaching	1,654,107	0.8	0.3	1.1
Teaching-Low	653,126	1.5	0.4	1.9
Teaching-High	61,254	1.8	0.3	2.1

Source: HCFA, Bureau of Data Management and Strategy.

limit is intended to encourage hospitals to reduce the duration of inpatient stays, by providing that additional patient days result in no additional payment for a given case. However, the PPS does provide for extra payment in cases involving transfers between short stay hospitals,<sup>13</sup> and post-hospital care provided by skilled nursing facilities (SNF's), home health agencies (HHA's), and other long-term care providers is currently not subject to prospective payment. Thus, the incentive might exist to unnecessarily transfer patients to other hospitals, or to prematurely discharge patients to post-hospital care.

Two aspects of this incentive could be troublesome:

- First, if patients are prematurely discharged from acute care facilities, there are potential ramifications for the quality of inpatient care received by Medicare beneficiaries under the PPS.<sup>14</sup> In addition, the influx of more severely ill patients to long-term care could affect the ability of long-term care providers to deal with the needs of their patients.

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<sup>13</sup> Under the PPS regulations in effect during FY 1984, the hospital discharging the patient receives the full DRG payment, while the transferring hospital receives the average per diem payment for the DRG for each day the patient spent there prior to transfer.

<sup>14</sup> The investigation of the quality issue is one of the major objectives of both current and planned PPS-related research. While there is currently no empirical indication of declines in the quality of care, this issue will continue to be a major focus of attention over the next several years.

- Also, if transfers to other hospitals and discharges to post-hospital care are being affected by these incentives, then any savings resulting from the new hospital payment system may be offset by the additional payments generated by these transfers and discharges.

For these reasons, the determination of the impact of the PPS on the pattern and appropriateness of the discharge status of Medicare hospital patients is a major focus of the PPS evaluation effort.

As shown in Table 6.14, discharges to other short-stay hospitals comprise 1.5 percent of all PPS bills, but only 0.5 percent of complete non-PPS bills, in the PPS Impact Data Base. These data seem to indicate that the incidence of transfers has increased markedly under the PPS.

By census division, the West North Central and East South Central regions have the highest percentages of PPS discharges to short-stay hospitals. Every region had large differences between PPS and non-PPS bills, with the largest differences appearing in the West North Central region.

As would be expected, transfers appear to be much more common among rural than among urban hospitals. However, each group had about 2.5 times as high a percentage of discharges to short-stay hospitals among its PPS bills as among its non-PPS bills.

Table 6.14

**DISCHARGES TO SHORT-STAY HOSPITALS  
AS A PERCENTAGE OF PPS VS. NON-PPS BILLS  
PPS IMPACT DATA BASE**

<u>Group</u>	Percent Discharges to Short-Stay Hospitals		
	<u>PPS Bills</u>	<u>Non-PPS Bills</u>	<u>Difference</u>
<u>All Groups</u>	1.5	0.5	+1.0
<u>By Census Division</u>			
New England	1.2	0.2	+1.0
Middle Atlantic	1.4	0.3	+1.1
South Atlantic	1.4	0.6	+0.8
East North Central	1.3	0.8	+0.5
East South Central	1.9	0.7	+1.2
West North Central	2.0	0.5	+1.5
West South Central	1.5	0.6	+0.9
Mountain	1.6	0.4	+1.2
Pacific	1.2	0.6	+0.6
<u>By Urbanicity</u>			
Urban	1.0	0.4	+0.6
Rural	2.5	1.0	+1.5
<u>By Teaching Status</u>			
Non-Teaching	1.8	0.7	+1.1
Teaching-Low	0.8	0.3	+0.5
Teaching-High	0.6	0.2	+0.4
<u>By Ownership</u>			
Not-for-Profit	1.3	0.5	+0.8
Proprietary	1.2	0.5	+0.7
Government	2.2	1.0	+1.2

Source: HCFA, Bureau of Data Management and Strategy.

Teaching status also appears to have the expected effect on transfers, with non-teaching hospitals having the highest percentage of discharges to short-stay hospitals and teaching hospitals with high ratios of residents per bed having the lowest percentage. Each of these groups had 2.5 to 3 times as high a percentage among PPS bills as among non-PPS bills.

Government hospitals have higher percentages of discharges to short-stay hospitals than do proprietary or not-for-profit hospitals, with each group having about 2.5 to 3 times as high a percentage among PPS bills as among non-PPS bills.

Similar results are obtained from data on discharges to long-term care providers (see Chapter 8), indicating that the anticipated increases in transfers and discharges to long-term care may, in fact, be occurring under the PPS. The impact of these changes, and their implications for both Medicare beneficiaries and long-term care providers, will be analyzed in future reports.

### **Charges and Payments**

Prior to the PPS, the Medicare program covered the "reasonable" cost of furnishing inpatient services to its beneficiaries, including routine and special care operating costs, ancillary service costs, capital costs, direct and indirect medical education costs, and other overhead expenses. The payment figure indicated on each bill was an interim amount, calculated to approximate total per diem hospital costs for all Medicare cases billed over the year.<sup>15</sup> Because these payment amounts

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<sup>15</sup> Since these amounts were not revised subsequent to the year-end settlement adjustments, they tended to underestimate actual per diem costs by three to five percent.

were based on aggregate per diem figures, they were not designed to accurately reflect costs on a case-by-case basis. Consequently, it was not unusual to find large discrepancies between charges and payments for individual cases--especially those requiring either very simple or very complex treatment.

Under the PPS, the Medicare payment for each case is fixed according to the DRG to which the case is assigned. The payment amount indicated on each bill covers routine and special care operating costs and ancillary costs, but excludes capital costs, direct and indirect medical education costs, kidney acquisition costs, and the professional component of hospital-based radiology and pathology service costs. Thus, the relationship of this payment amount to that found on pre-PPS bills is questionable. In addition, the relationship between charges and payments on PPS bills is not clear *a priori*: to the extent that payments reflect aggregate average costs for each type of case, while charges are determined at the individual hospital level, the two may have very different distributions; on the other hand, payments and charges under the PPS should not be subject to the wide discrepancies by type of case that were prevalent on pre-PPS bills.

Table 6.15 shows recent trends in charges and payment amounts per Medicare discharge. As this table shows, data from non-PPS bills for FY 1984 are consistent with the previous trend toward higher charges and payments (although to a somewhat lesser degree), along with a decreasing ratio of payment amounts to charges. Data from PPS bills, however, indicate an apparently complete reversal of these trends: while the average payment amount per PPS bill appears to be slightly

Table 6.15

CHARGES AND PAYMENT AMOUNT PER MEDICARE DISCHARGE  
IN SHORT STAY HOSPITALS  
FY 1980-84

Fiscal Year	Average Charges Per Discharge		Average Payment Amount Per Discharge		Payment Amount as a Percentage of Charges
	Amt.	Pct. Change	Amt.	Pct. Change	
1980	3,003	+14.3	2,086	+11.9	69.5
1981	3,497	+16.5	2,395	+14.8	68.5
1982	4,095	+17.1	2,744	+14.6	67.0
1983	4,661	+13.8	3,000	+9.5	64.5
1984 <sup>a</sup>	4,892	+5.0	3,023	+0.6	61.8
--non-PPS <sup>b</sup>	4,004	-14.1	2,875	-4.4	71.8

<sup>a</sup> Data based on bills processed through September 1984.<sup>b</sup> Non-PPS bills are not necessarily the same as discharges.

Source: HCFA, Bureau of Data Management and Strategy.

lower than that for non-PPS bills,<sup>16</sup> charges on PPS bills are much lower. However, it must be noted that, since most hospitals still charge on a per diem basis, this difference between PPS and non-PPS charges may be largely explained by the shorter length of stay among PPS patients--among the bills from which the data shown in Table 6.15 are derived, the difference in length of stay is 19.4 percent, while the difference in charges is 18.2 percent.

Table 6.16 presents charge and payment data by hospital group, for PPS versus non-PPS bills in the PPS Impact Data Base. As this table shows, the relationship between PPS and non-PPS charges per bill and the ratio of payment to charges on these bills is fairly consistent. Charges per bill are an average of 12.4 percent lower for PPS bills in this file, and the ratio of payment amounts to charges is 12.1 points higher.<sup>17</sup>

By census division, average charges per PPS bill range from \$3,319 in the East South Central Region to \$4,808 in the West. Regional variation in the payment to charge ratio is relatively small, however, and basically reflects non-PPS patterns. This may reflect the region-specific determination of PPS payment rates.

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<sup>16</sup> In the PPS Impact Data Base, which excludes interim bills and bills from hospitals in waiver states, the non-PPS payment figure is lower than the figure for PPS bills. See Table 6.16.

<sup>17</sup> It must be noted that "pass-through" costs are excluded from the PPS payment figures represented on the patient bill record. Presumably, the inclusion of these costs would substantially increase the PPS payment to cost ratios represented in Tables 6.15 and 6.16.

Table 6.16

CHARGES AND PAYMENT AMOUNTS FROM PPS AND NON-PPS BILLS  
PPS IMPACT DATA BASE

Group	PPS Bills			Non-PPS Bills			Ratio of Payment Amt. to Charges
	Average Charges Per Bill	Average Payment Amt. Per Bill <sup>a</sup>	Ratio of Payment Amt. to Charges	Average Charges Per Bill	Average Payment Amt. Per Bill		
<u>All Groups</u>	3,929	2,852	72.6	4,487	2,712		60.5
<u>By Census Division</u>							
New England	4,143	3,225	77.8	3,822	2,530		66.2
Middle Atlantic	4,349	2,815	64.7	5,687	3,043		53.5
South Atlantic	3,824	2,584	67.6	4,572	2,685		58.7
East North Central	4,284	3,245	75.7	4,625	2,937		63.5
East South Central	3,319	2,096	63.1	3,844	2,162		56.2
West North Central	3,495	2,708	77.5	3,690	2,464		66.8
West South Central	3,437	2,539	73.9	3,695	2,318		62.7
Mountain	3,817	2,932	76.8	4,117	2,507		60.9
Pacific	4,808	3,581	74.5	5,135	3,177		61.9
<u>By Urbanicity</u>							
Urban	4,465	3,294	73.8	5,011	3,027		60.4
Rural	2,699	1,841	68.2	3,010	1,826		60.7
<u>By Teaching Status</u>							
Non-Teaching	3,502	2,485	71.0	3,900	2,333		59.8
Teaching-Low	4,815	3,629	75.4	5,296	3,181		60.1
Teaching-High	5,984	4,486	75.0	6,974	4,583		65.7
<u>By Ownership</u>							
Not-for-Profit	4,143	3,071	74.1	4,676	2,848		60.9
Proprietary	4,371	2,867	65.6	4,777	2,537		53.1
Government	3,130	2,190	70.0	3,615	2,328		64.4

<sup>a</sup> Does not include indirect medical education payments or "pass-throughs".

Source: HCFA, Bureau of Data Management and Strategy.

Urban hospitals report charges of \$4,465 per PPS bill, while average charges in rural hospitals are \$2,699. However, while the non-PPS payment to charge ratio for urban hospitals is approximately the same as that for rural hospitals, the PPS payment to charge ratio for urban hospitals is 5.6 points higher than that for rural hospitals.

As might be expected, charges per bill at non-teaching hospitals are substantially lower than those at teaching hospitals. However, payment to charge ratios are slightly greater at teaching hospitals. This difference is accentuated by the fact that direct and indirect medical education payments are not included in the PPS payment amounts.

Government hospitals have substantially lower charges per bill than do the other ownership groups, and also the smallest difference in the payment to charge ratio.

It must again be stressed that the interpretation of the charge and payment data presented here is far from definitive. Because of the change in the definition of the Medicare payment figure contained on patient bills, comparability between PPS and non-PPS data is questionable. In addition, the effect of the PPS on hospital charges reported under the new system is unknown.

#### **Cost-Based "Pass-Throughs"**

PPS statutes require that the prospective payment rate serve as total Medicare payment for all inpatient operating costs associated with each Medicare discharge.

As stated above, these costs include the Part A operating costs for routine services, ancillary services, and intensive care type services. Capital-related costs and costs of direct medical education have been excluded from the definition of inpatient operating costs under the PPS.<sup>18</sup> Additional study is required to determine how to incorporate these costs into a prospective payment system. In the interim, payment for capital and direct medical education continues on a "pass-through" basis--that is, the hospital continues to be reimbursed for reasonable costs in these categories.

Two issues are of particular concern to HCFA with respect to costs currently excluded from the prospective payment system:

- First, continuing to pay capital and direct medical education costs on a "pass-through" basis may create incentives for hospitals to substitute capital for labor, and, within the labor category, to substitute the services of resident physicians for the services of other hospital personnel. If such substitution does occur, hospitals would be moving from one mode of production to another--perhaps less efficient--mode of production, solely as a result of differences in reimbursement between operating and pass-through costs.
- Second, paying capital and direct medical education costs on a "pass-through" basis means that these categories are not subject to the efficiency incentives provided by prospective payment. Thus, there is concern that the rate of increase in Medicare payments for capital and medical education may exceed the rate of increase in Medicare payments for operating costs.

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<sup>18</sup> Kidney acquisition costs are also excluded from the definition of routine operating costs under the PPS.

Given these potential outcomes, costs excluded from the prospective payment system merit close scrutiny during the initial phases of PPS implementation.

The following items are treated as capital-related costs and, as such, continue to be reimbursed under the reasonable cost method:

- Net depreciation expense;
- Leases and rentals for the use of assets that would be depreciable if the provider owned them outright;
- Betterments and improvements that extend the estimated useful life of an asset by at least two years or increase significantly the productivity of an asset;
- The cost of minor equipment that are capitalized rather than charged off to expense;
- Interest expense incurred in acquiring land or depreciable assets used for patient care;
- Insurance on depreciable assets used for patient care;
- Taxes on land or depreciable assets used for patient care; and
- For proprietary providers, a return on equity capital.

Historically, capital-related costs have accounted for about seven percent of hospital operating costs, as indicated in Table 6.17. Whether this relationship changes as a result of the PPS is of considerable importance to HCFA. A definitive answer to this question will not be possible until post-PPS cost report information is

Table 6.17

**CAPITAL COSTS  
AS A PERCENTAGE OF OPERATING COSTS IN U.S. HOSPITALS  
1978-81**

<u>Group</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>
<u>All Groups</u>	6.82	6.86	6.88	6.80
<u>By Census Division</u>				
New England	5.89	6.18	6.05	5.67
Middle Atlantic	5.99	6.08	6.26	6.23
South Atlantic	6.53	6.63	6.77	6.91
East North Central	6.79	6.89	6.74	6.63
East South Central	6.73	6.74	6.92	6.97
West North Central	7.00	6.97	7.08	7.00
West South Central	7.51	7.37	7.44	7.25
Mountain	7.04	6.82	6.86	6.53
Pacific	6.66	6.69	6.65	6.73
<u>By Urbanicity</u>				
Urban	7.03	7.00	6.93	6.95
Rural	6.67	6.75	6.82	6.64

Source: Center for Health Economics Research, Medicare-Medicaid Payment Policies and Hospital Capital Formation. First year report on HCFA Grant No. 18-P-98267/1-02, August 20, 1984, Tables 7.6-7.9.

available for analysis. However, since operating costs are more variable than capital costs, one would expect the ratio of capital to operating costs to increase, at least in the short run, as the rate of increase in operating costs slows in response to the PPS.

The long-run effects of the PPS are less certain. On the one hand, cost-based reimbursement for capital per se provides an incentive for capital investment. On the other hand, capital expenditures have operating cost implications that must be considered, as well. If payments for operating costs are fixed--as they are in the Medicare prospective payment system--hospital administrators have an incentive to reduce capital expenditures that tend to increase operating costs. The net effect of these opposing incentives is unclear, and must be estimated empirically once the necessary cost report information is available.

Medical education costs include not only those costs associated with physician training programs, but also with nursing and other para-professional training programs. Direct medical education costs include stipends of trainees, compensation of teachers, and classroom and associated overhead, and are normally allocated to special cost centers under Medicare's cost reporting system. Medicare's share of these costs is determined using the same procedures used to allocate patient care costs to Medicare. The direct costs of approved education programs are currently excluded from prospective payment, and continue to be paid on a "pass-through" basis.

Direct medical education costs comprised approximately 3.5 percent of total hospital operating costs in 1981, as indicated in Table 6.18. However, for hospitals extensively engaged in medical education (i.e., hospitals with resident per bed ratios in excess of 0.25), the ratio of direct medical education costs to operating costs was 11.9 percent. For hospitals with less extensive teaching activity (i.e., hospitals with resident per bed ratios greater than but less than 0.25), this ratio was approximately 5.6 percent.

Table 6.19 shows the results of a simulation by HCFA of what FY 1984 per-case payments for capital costs, direct medical education costs, and indirect medical education costs<sup>19</sup> would have been had all hospitals been reimbursed 100 percent on the basis of a regional Federal rate beginning on October 1, 1983. This table should not be construed as representing actual expenditures, but only a simulation of the potential effect of PPS payment procedures under very specific assumptions.<sup>20</sup>

As Table 6.19 shows, simulated Medicare payments for capital and medical education costs were found to account for 14.3 percent of all payments made under the PPS Federal rate, with capital accounting for 6.4 percent, direct medical education 2.4 percent, and indirect medical education 5.6 percent. Among teaching hospitals, these shares were 5.4 percent, 5.0 percent, and 12.6 percent, and, among teaching hospitals with a high ratio of residents per bed, these shares were 4.1 percent, 7.8 percent, and 30.2 percent, respectively.

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<sup>19</sup> Indirect medical education costs, while not reimbursed on a "pass-through" basis, are often considered together with direct medical education costs in assessing the effect of the PPS on teaching hospital programs.

<sup>20</sup> The assumptions underlying this simulation are crucial to the correct interpretation of these figures. These assumptions are listed in Table 6.19.

Table 6.18  
 DIRECT MEDICAL EDUCATION COSTS  
 AS A PERCENTAGE OF OPERATING COSTS IN U.S. HOSPITALS  
 1981

<u>Group</u>	<u>All Hospitals</u>	Teaching Hospitals with Resident-to-Bed Ratios:		
		<u>Less Than 0.25</u>	<u>Greater Than 0.25</u>	
<u>All Groups</u>	3.45	5.58	11.90	
<u>By Census Division</u>				
New England	4.78	7.17	10.14	
Middle Atlantic	6.62	7.75	14.63	
South Atlantic	2.44	4.91	11.06	
East North Central	3.76	5.85	8.60	
East South Central	1.80	3.76	11.25	
West North Central	3.20	4.80	15.72	
West South Central	1.47	2.87	9.40	
Mountain	1.70	3.35	12.13	
Pacific	1.94	3.30	10.76	
<u>By Urbanicity</u>				
Urban	4.03	5.66	11.90	
Rural	0.52	2.89	11.90	

Source: 1981 Medicare Cost Reports.

Table 6.19

SIMULATION OF PER-CASE  
CAPITAL AND MEDICAL EDUCATION PAYMENTS

Assumptions Underlying Simulation

1. Hospitals excluded from PPS by law (psychiatric, pediatric, long term care, etc.) were excluded from the analysis.
2. Hospitals located in states with current HCFA waivers (Maryland, Massachusetts, New Jersey, New York) were excluded from the analysis.
3. Hospitals with incomplete Medicare Cost Reports at the time the data set was created were excluded from the analysis.
4. Statistical outliers (29 hospitals with cost per case values in excess of two standard deviations of an average cost regression line) were excluded from the analysis.
5. Simulations are based on remaining 4,978 hospitals with completed Medicare Cost Reports in 1981.
6. Hospital costs were rolled forward from calendar year 1981 to fiscal year 1984 using the actuarial estimates used in the PPS.
7. Hospital case mix index values were increased by 3.38 percent based on the estimates used in the PPS.
8. The simulations assume that there was no change in admissions from calendar year 1981 to fiscal year 1984.
9. The simulations assume that all hospitals were reimbursed 100% on the basis of a regional Federal payment beginning October 1, 1983.

Table 6.19  
(cont.)

	Total Payments Per Case, Including Pass-Throughs	DRG Payments Per Case	Capital Payments Per Case	Direct Medical Education Payments Per Case	Indirect Medical Education Payments Per Case
All hospitals	3,675	3,144	234	88	204
Teaching hospitals	4,848	3,718	262	242	613
Hospitals with Resident to Bed Ratios Greater than 0.25	7,150	4,079	291	556	2,158
Hospitals with Resident to Bed Ratios Between 0 and 0.25	4,476	3,659	258	192	363
Non-Teaching Hospitals	3,090	2,858	220	12	0

Source: HCFA, Bureau of Data Management and Strategy.

Several additional observations may be drawn from the figures presented in Table 6.19:

- o Simulated DRG payments per case were found to be 30.1 percent higher for teaching hospitals, and 42.7 percent higher for teaching hospitals with a high ratio of residents per bed, than for non-teaching hospitals.
- o While, according to the simulation results, non-teaching hospitals would receive a premium of 8.1 percent above their DRG payments (primarily from the reimbursement of capital costs), teaching hospitals would receive 30.4 percent above their DRG payments, due mostly to additional payments for direct and indirect medical education costs. Teaching hospitals with a high ratio of residents per bed would receive an estimated premium of 75.3 percent above their DRG payments, according to the simulation results.
- o Simulated total payments per case were thus found to be 56.9 percent higher for teaching than for non-teaching hospitals. Simulated total payments per case for teaching hospitals with a high ratio of residents per bed were found to be 131.4 percent higher than for non-teaching hospitals.

In summary, then, according to the simulation results, the reimbursement of teaching hospitals for their indirect medical education costs was found to represent a substantial redistribution of income among hospitals.

Expenditures for both capital and medical education will be closely monitored as the PPS phases in to a fully prospective Federal rate. In addition, the Department is currently studying a variety of options for incorporating capital into

the prospective payment system.<sup>21</sup> To identify improvements which could be made in the method of reimbursement for medical education costs, the Department is also conducting a study of the organization and financing of medical education programs in a sample of teaching hospitals, from which preliminary data should be available some time in 1985.

#### Hospitals in Waiver States

As discussed in Chapter 2, hospitals paid under authorized State cost control systems are waived from participation in the PPS. During FY 1984, four States--Maryland, Massachusetts, New Jersey, and New York--had such authorized programs. Since the purpose of the waiver from the PPS is to allow for the testing of alternative payment systems, the comparison of bills received from hospitals covered by these systems with PPS and non-PPS bills from hospitals in other States may provide some additional insight into the impact of the PPS.<sup>22</sup> Table 6.20 provides a comparison of the characteristics of waiver hospitals and "PPS-eligible" (i.e., non-waiver) hospitals in the PPS Impact Data Base, and Table 6.21 compares waiver, PPS, and non-PPS bills in this data base, in terms of several of the indicators of performance which have been discussed earlier in this chapter.

Table 6.20 shows that, of the almost 6.7 million bills contained in the PPS Impact Data Base, 936,679 (14.0 percent) were received from hospitals in waiver States. Waiver hospitals comprise only 9.4 percent of the hospitals in this data base,

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<sup>21</sup> Results of this study are to be included in a Report to Congress which is currently in preparation.

<sup>22</sup> A study of State systems of hospital payment is to be included in the 1986 annual report. This section is not meant as an analysis of the performance of waiver State programs, but merely to provide an additional reference point for the evaluation of the impact of the PPS.

Table 6.20

**COMPARISON OF HOSPITAL CHARACTERISTICS  
WAIVER STATE HOSPITALS VS. "PPS-ELIGIBLE" HOSPITALS  
IN THE PPS IMPACT DATA BASE**

<u>Descriptor</u>	<u>Waiver State Hospitals</u>	<u>"PPS-Eligible" Hospitals</u>
Number of Bills	936,679	5,754,492
Number of Hospitals	510	4,933
<b>Percentage of Hospitals by Group:</b>		
--Less than 100 beds	19.0	51.6
--Urban	86.3	48.2
--Teaching	39.2	15.7
--Proprietary	7.3	12.1

Source: HCFA, Bureau of Data Management and Strategy.

indicating that these hospitals are larger on average than the "PPS-eligible" group. This impression is reinforced by the fact that "small" hospitals (those with under 100 beds) comprise only 19 percent of the waiver group, compared with 51.6 percent of the "PPS-eligible" group.

Table 6.20 also shows that urban hospitals are disproportionately represented among the waiver hospitals, comprising 86.3 percent of this group, compared with 48.2 percent of the "PPS-eligible" group. Teaching hospitals are also disproportionately represented among waiver hospitals, comprising 39.2 percent of this group, compared with 15.7 percent of "PPS-eligible" hospitals. The waiver States contain a smaller share of proprietary hospitals (7.3 percent versus 12.1 percent of "PPS-eligible" hospitals).

As Table 6.21 shows, average length of stay for Medicare patients in waiver hospitals is 9.8 days, compared with 7.5 days for PPS bills and 8.2 days for non-PPS bills. This difference in length of stay is evident across hospital groups, as well as on an aggregate level, and may reflect differences in the incentives provided by individual State payment programs,<sup>23</sup> as well as historical tendencies toward long hospital stays in these States.

Average charges per bill for waiver hospitals seem comparable to those for the non-PPS group, and somewhat higher than those for PPS bills. Again, this seems to reflect a different set of incentives operating in waiver States--although, as mentioned earlier, charge data may have different meanings under different

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<sup>23</sup> For example, the New York system pays on a per diem basis, with a resulting incentive for longer hospital stays.

Table 6.21

COMPARISON OF WAIVER STATE BILLS WITH PPS AND NON-PPS BILLS  
FROM PPS IMPACT DATA BASE

<u>Indicator</u>	<u>Waiver State Bills</u>	<u>PPS Bills</u>	<u>Non-PPS Bills</u>
Average Length of Stay	9.8	7.5	8.2
Average Charge per Bill	\$4,328	\$3,929	\$4,487
Average Payment per Bill	\$3,108	\$2,852	\$2,712
Ratio of Payment to Charges	71.8%	72.6%	60.5%
Case-Mix Index	1.0848	1.1170	1.0950

Source: HCFA, Bureau of Data Management and Strategy.

payment systems. In contrast, the average payment per bill in waiver State hospitals is higher than that for either PPS or non-PPS bills, resulting in a ratio of payments to charges in waiver States of 71.8 percent--comparable with the ratio for PPS bills, and over ten percent higher than that for non-PPS bills.<sup>24</sup>

The Medicare Case-Mix Index for waiver State hospital bills in the PPS Impact Data Base is 1.0848. This figure is comparable to the CMI for non-PPS bills, but somewhat lower than that for PPS bills--perhaps reflecting the influence of PPS incentives on the CMI.

HCFA has developed a tracking system that compares total payments under each waiver State cost control system with the payments that would have been made under the Medicare system in effect for the other 46 States and the District of Columbia. Under this tracking system, after an intermediary processes a provider claim for payment under a State cost control system, it is to reprocess the claim through the Medicare Code Editor, GROUNDER, and PRICER programs to calculate a Medicare payment amount. Payments currently made by Medicare on a "pass-through" basis are also to be considered, as well as the cost-based reimbursement of certain types of facilities under the current Medicare system. The tracking system also provides for the continuous revision of expenditure data to incorporate the results of rate adjustments, appeals, and late claims. Quarterly reports will be produced beginning in 1985, which will enable HCFA to continuously monitor the performance of each State system. As stated above, research on these

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<sup>24</sup> As stated above, the payment amount on PPS bills does not include payments for "pass-through" categories. However, this is not the case for bills from hospitals in waiver States.

and other issues relating to State systems of hospital payments will be presented in the 1986 annual report.

#### Other Issues

As mentioned above, this report is limited by the available data and other factors to a description of several measures of the performance of the PPS during its first year of implementation. Due to these factors, several of the issues listed in Table 6.1 could be addressed only indirectly, at best. There are, however, several additional issues on which tentative "evidence" of the impact of the PPS may be found in published form. Although much of this "evidence" cannot be considered as a basis for policy evaluation--at least not without substantial additional analysis--it does provide an initial indication of the effect of the PPS on several relevant issues, including:

- Hospital financial status;
- Hospital occupancy rates;
- Hospital staffing;
- Hospital technology; and
- Hospital management.

These issues are discussed briefly below.

The effect of prospective payment on the financial status of hospitals has important implications for the program's success. If the PPS results in widespread

financial hardship for all hospitals or specific groups of hospitals, the access of Medicare beneficiaries (as well as other patients) to required health care may be hindered. In addition, the willingness of the nation's hospitals to cooperate in Federal cost-containment efforts may be severely diminished under such circumstances. Conclusive evidence on this issue will not be available until the PPS has been fully implemented, hospitals have had adequate time to develop their responses to PPS incentives, and appropriate analyses of these responses can be conducted.

Current data from the American Hospital Association (AHA),<sup>25</sup> however, indicate that the growth in cost per case, at least, does seem to be slowing-- for the three month period ending with May 1984, cost per case was 6.8 percent higher than for the period ending with May 1983, compared with a 12.6 percent rate of growth one year earlier. This indicates that the PPS may be having some positive impact on the determinants of hospital financial status. If hospitals can economize sufficiently in their provision of health care, then the necessary reduction in the rate of growth of Medicare payments may be accomplished without inflicting undue hardships on the nation's hospitals or their patients.

As discussed earlier in this chapter, the PPS was expected to encourage hospitals to increase admissions to offset the expected decrease in length of stay. Evidence presented above shows that, while length of stay has decreased as expected, admissions do not seem to be rising. This evidence is reinforced by AHA figures that show a decrease in occupancy rates--from an average of 75.9 percent for the first five months of 1983 to 70.3 percent for the same period in 1984.<sup>26</sup>

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<sup>25</sup> American Hospital Association. Trends (81), August 1984.

<sup>26</sup> *Ibid.*

AHA data also show a decrease in hospital staffing levels, which may be due in part to the incentive for efficient provision of hospital care under the PPS. As stated in the AHA monthly publication, Trends:

"Full-time equivalent (FTE) personnel fell to 3.15 million in the quarter ending May 1984 from a peak of 3.20 million one year earlier. The...reduction...continues the trend of steeper monthly declines in 1984...FTE's per case fell 0.3 percent in the quarter ending May 1984...The fact that FTE's fell faster than cases... indicates that FTE reductions are more than just responses to falling demand. They are also a response to cost containment incentives as hospitals attempt to improve efficiency."<sup>27</sup>

Moreover, the AHA reports, this decline in staffing levels appears to be prevalent at hospitals across the country.<sup>28</sup>

The effect of the PPS on hospital adoption of new technology is expected to be strong. Since the incentive is to minimize operating costs per case in the short run, hospitals may be reluctant to incorporate new treatment methods or equipment which raise these costs--even if they may lower overall costs in the long run. In recognition of the importance of this issue, the Congress mandated the formation of a Prospective Payment Assessment Commission, to assume an advisory role in evaluating the impact of the PPS on the development and adoption of new technology.

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<sup>27</sup> Ibid.

<sup>28</sup> Hospitals, September 16, 1984.

Since PPS incentives are designed to promote efficiency in the provision of hospital care, the impact of the new system on hospital management is to be watched closely. Several aspects of hospital management are expected to be affected by the PPS--pressure on hospital managers to monitor the efficiency of their departments, growing emphasis on management information systems, increased involvement of physicians in hospital management decisions; and the formation of new management structures within hospitals and groups of hospitals.

Information presented by the AHA indicates that all of these effects are being felt by the hospital sector, to varying degrees:<sup>29</sup>

- Apparently, increased pressure to reduce costs is coming not only from the PPS, but also from private third-party payers and private business coalitions.
- Companies that sell management information software to hospitals are expanding rapidly, and the market for such systems is expanding to smaller hospitals, as well as the very large hospitals.
- Physician involvement in hospital management committees is much more common than it was before the implementation of the PPS, and physicians are becoming increasingly conscious of the need to cut the cost of inpatient care.
- Hospitals are exhibiting a growing interest in contract management, which--the AHA reports--can be clearly linked to the PPS.

In addition, it is expected that the PPS will lead to an increase in hospital mergers and the growth of hospital chains, in an attempt to increase the efficiency (and

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29 Ibid.

profitability) of hospital care. According to the Congressional Budget Office, the number of facilities owned by big hospital chains increased from 438 to 755 (72 percent) between 1978 and 1983. Although chain-owned facilities still represent only about ten percent of all hospitals, this trend is an important one, and will continue to be monitored over the next several years.

### **Discussion**

Although the findings presented in this chapter are primarily descriptive and are based on preliminary data, one major theme seems to be evident throughout: that the PPS is beginning to have an effect on the way that hospitals provide inpatient care, and that this effect tends to be consistent with the expectations of the system's designers. The availability and analysis of additional data over time will allow for closer and more systematic examination of the issues discussed above, but the following findings may be interpreted as providing at least some hint as to the impact of the PPS:

- Projected figures for FY 1984 show a decrease of 1.7 percent in Medicare short-stay hospital admissions, contrary to the increase in admissions that was anticipated when the PPS was enacted. This translates to a decrease of 3.5 percent in admissions per thousand Medicare enrollees.
- Projected length of stay for Medicare patients in FY 1984 was 9.0 percent lower than in FY 1983--this represented the largest decline in the history of the Medicare program. Medicare length of stay appears to be significantly lower than would have been projected from pre-PPS trends.

- Data from the PPS Impact Data Base indicate an 8.5 percent difference in average length of stay between PPS and complete non-PPS Medicare bills. However, the PPS/non-PPS difference in length of stay was most likely understated by the omission of bills for other than complete stays.
- The CMI for PPS bills was about two percent higher than that for complete non-PPS bills received during FY 1984, according to the PPS Impact data. However, the PPS/non-PPS difference in CMI was 7.9 percent for New England hospitals (although only 1.2 percent of the bills in this region were PPS bills), 4.5 percent for hospitals in the Pacific region, 8.9 percent for teaching hospitals with high concentrations of residents, and 3.8 percent for proprietary hospitals.
- The observed changes in the CMI seem to reflect shifts among the most frequent DRG's between 1981 and FY 1984:
  - all five of the DRG's in this group which involve admissions for surgical procedures increased in frequency between 1981 and FY 1984;
  - all three of the DRG's in this group (other than DRG 468) that had very high relative weights (i.e., over 2.0000) increased in frequency; and
  - of the 11 DRG's in this group that experienced declines in frequency, eight had low relative weights (i.e., under 1.0000).
- An analysis of preliminary data from PPS hospital bills indicates that the percentage of outlier cases and consequently, the percentage of outlier payments, are lower than was projected at the outset of the PPS. Also, the ratio of cost outliers to day outliers was found to be greater than projected.
- The PPS Impact data indicate that hospitals in New England, urban hospitals, and teaching hospitals were reporting high percentages of outlier cases.

- The percentage of discharges to other short-stay hospitals is a full percentage point higher among PPS bills than among non-PPS bills in the PPS Impact Data Base.
- Data from hospital bills received by HCFA indicate that charges are lower, and the ratio of payments to charges higher, under the PPS.
- A simulation of capital and medical education payments indicates that teaching hospitals receive sizable premiums in addition to their already higher per-case DRG payments, mostly due to direct and indirect medical education payments.

As stated above, the findings presented in this chapter indicate that the PPS is beginning to have an effect on the way that hospitals provide inpatient care. As more data become available on hospital behavior under the PPS, it will be possible to follow up these initial findings, and to explore in more detail the PPS study issues listed in Table 6.1.



Chapter 7

## IMPACT ON MEDICARE BENEFICIARIES

### Overview

The primary objective of the PPS is to encourage cost-efficient behavior by hospitals under Medicare, while ensuring that Medicare beneficiaries continue to have adequate access to high quality health care. Thus, an important aspect of the impact of the PPS involves its effect on the ability of the Medicare system to maintain or improve upon pre-PPS levels of access to and quality of care for its beneficiaries. The purpose of this chapter is to examine several issues regarding Medicare beneficiaries' access to care and the quality of care that they receive, and to lay the groundwork for several analyses aimed at assessing the impact of the PPS on these issues.

### Matrix Study Issues

The PPS Study Issues Matrix in Chapter 1 contains a listing of the major issues to be considered in evaluating the impact of the PPS on Medicare beneficiaries. These issues, which are reproduced in Table 7.1, represent economic concerns, as well as the PPS' impact on quality and access to care, in terms of both the anticipated benefits of the new system and the unintended consequences which may arise under prospective payment. Although limitations on the availability of data (see below) preclude the analysis of many of these issues at this time, the list in Table 7.1 provides a framework for the analysis of the impact on Medicare beneficiaries of the PPS as it develops over the next several years.

Table 7.1

**PPS STUDY ISSUES:  
IMPACT ON MEDICARE BENEFICIARIES**

**Economic Impact**

- Anticipated Benefits— Part A liability limited to legal deductibles and coinsurance.
- Unintended Consequences— Higher out-of-pocket costs, if Part B utilization increases.

**Impact on Quality of Care**

- Anticipated Benefits— Shorter hospital stays.  
Lower rates of nosocomial infection.  
Fewer in-hospital complications and deaths.  
Fewer unnecessary tests and services.  
Reduction in iatrogenic complications.  
Specialization—increase in efficiency and proficiency.
- Unintended Consequences— Tendency toward premature discharges.  
Decrease in necessary tests and services.  
Decrease in necessary physician consultations.

**Impact on Access to Care**

- Anticipated Benefits— Decrease in overall cost of services provided.  
Shift in treatment to more appropriate settings.  
Regional availability of broad range of services.
- Unintended Consequences— Selective exclusion of high-cost case types.  
"Dumping" of "unprofitable" types of patients.

## **Limitations**

As stated above, the scope of the analysis in this report is limited by several considerations. Foremost among these, in the context of this chapter, is the availability of current data files required for the contemplated pre-PPS/post-PPS comparisons of access and quality. Specifically, two types of analytic files are required:

- A beneficiary utilization file, to be used in computing utilization rates for specific beneficiary groups--since the computation of utilization rates is very sensitive to the level of completeness of the hospital bill data (MEDPAR and PATBILL) files, currently available data could not yet be relied upon to yield accurate results; and
- A person-level file, to be used in describing utilization and outcomes for individual beneficiaries, rather than considering each hospital stay separately--the construction of this file involves the merging of individual hospital bills for each beneficiary, requiring a substantial time lag between the receipt of the bills and the availability of the file for analysis.

Due to these considerations, the analysis in this chapter is limited to data from the period preceding the PPS, to establish a baseline for the pre-PPS/post-PPS analysis to be reported in the future .

## **Chapter Organization**

The body of this chapter begins with a description of efforts by the Department of Health and Human Services to monitor and evaluate the impact of the PPS on the quality of health care provided to Medicare beneficiaries. Included is a discussion of several relevant research projects currently being planned, conducted, or funded by the Department.

Following that discussion, an analysis is presented of three aspects of health services utilization by Medicare beneficiaries :

- Beneficiary Use of Inpatient Hospital Services;
- Specialization of Cases Within and Among Hospitals; and
- Outcomes: Rehospitalization and Deaths.

As stated above, these analyses are limited to the presentation and discussion of baseline data, along with an outline of the research to be conducted once the appropriate post-PPS data are available.

### **The PPS and the Quality of Care**

Among the major concerns of the Department is the continued access of Medicare beneficiaries to appropriate health care under the PPS, and the maintenance of the quality of care provided to these beneficiaries. The issues of access and quality are particularly important to certain groups within the Medicare population, such as the disabled (especially the aged disabled), renal patients, the very old, and the aged poor, each of whom have certain health and socio-economic

characteristics that make them particularly vulnerable to the incentives provided by the new payment system. Because these groups are likely to require more intensive (and thus more expensive) care for a given type of inpatient episode, hospitals may tend to view them as potential money losers under prospective payment.

On the other hand, certain incentives under the PPS may serve to encourage improvements in access and quality. Because improved management is encouraged, the effectiveness of health care may be enhanced. Greater integration of health care delivery under the PPS may result in the provision of more appropriate and effective care. Hospitals are also encouraged to specialize in services and procedures that they provide most efficiently, which may improve outcomes in certain cases, as found in Lubitz and Riley (1984) and several other studies. In addition, the incentive to eliminate unnecessary services should result in an improvement in the quality of care. Moreover, shorter inpatient stays should reduce the risk of nosocomial infection and other iatrogenic incidents to which the elderly are especially vulnerable.

#### **Monitoring Access and Quality**

The major provision for the monitoring of access and quality under prospective payment is the Utilization and Quality Control Peer Review Organization (PRO) program. This program was originally established under Section C of P.L. 97-248, The Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA), to review health care services and items provided to Medicare patients, for the purpose of determining whether:

- Such services are or were reasonable and medically necessary;
- The quality of such services meets professionally recognized standards; and
- Services proposed to be provided on an inpatient basis could be provided in an appropriate manner and more economically on an outpatient basis.

The PRO's were authorized to issue denial determinations based on their assessments of medical necessity and appropriateness of treatment and setting.

P.L. 98-21, the Social Security Amendments of 1983, modified the PRO program, extending the functions of the PRO's to include the review of:

- The validity of diagnostic and procedural information provided by hospitals;
- The completeness, adequacy, and quality of care provided;
- The appropriateness of admissions and discharges; and
- The appropriateness of care for which outlier payments are made.

Each hospital was required to enter into a contract with the appropriate PRO by October 1, 1984 (this date was later changed to November 15, 1984). Based on the PRO's findings, the Secretary may deny payment or require hospitals to take necessary action to correct unacceptable medical or other practices. A more specific description of PRO admission and quality objectives and activities for the first year of the PPS may be found in Chapter 5.

HCFA's survey and certification program is designed to ensure that hospitals and skilled nursing facilities (SNF's) are in compliance with the health and safety requirements of the Conditions of Participation in the Medicare program. Of the approximately 6,800 hospitals participating in the Medicare program, the individual States survey about 1,500 hospitals for compliance with the Medicare requirements. The remaining hospitals, accredited by the Joint Commission on the Accreditation of Hospitals (JCAH), are, by law, deemed in compliance by virtue of their JCAH accreditation.

In anticipation of the increased need for monitoring the provision of health care under the PPS, the Conditions of Participation are being revised to place more emphasis on outcome-oriented criteria. In particular, a new quality assurance condition has been proposed that would require hospitals to have an effective program to identify and resolve problems that affect the quality of patient care. In addition, a number of the previously existing requirements that specify procedures for ensuring quality have been incorporated into the proposed quality assurance condition, in the belief that a focused requirement will be a better vehicle through which to address the quality of care.

Under this condition, the surveyor would determine compliance by examining whether there is a written plan to evaluate clinical services and medically-related patient care and services, and whether that plan is being effectively implemented. Such plans should consider:

- Patient care problems;
- The causes of such problems;

- Corrective actions to be taken; and
- Followups to determine the effectiveness of the actions taken.

The surveyor would be required to:

- Review a sample of patient records for documentation regarding the nature of post-hospital care arrangements;
- Interview patients who are ready for discharge, to determine if medically-related social, psychological, and educational services of the hospital have been made available to them; and
- Use specific "indicators" to help measure the facility's program in recognizing important medical care problem areas.

These revised criteria and survey procedures should improve the ability of the Medicare program to monitor the quality of participating facilities.

Another measure designed to ensure access to necessary care is the swing-bed program. This program allows small rural hospitals to utilize acute care beds to provide SNF-level care to Medicare patients who no longer need acute care but do not have access to SNF beds. Over 400 hospitals are currently participating in this program. The Department is currently evaluating the impact of the PPS on this program, and whether it should be expanded to larger and/or urban hospitals.

Other Federal programs are involved in the review of specific quality areas, such as radiation safety and the control of infectious diseases. In addition, voluntary second opinion programs, combined with the review efforts of the PRO's, are designed to reduce the incidence of unnecessary surgery. Moreover, almost all of the health professions have specified professional standards of practice, which serve to ensure the quality of care provided to patients treated by health care practitioners.

#### **Evaluating the Impact of the PPS**

Several studies are currently underway to evaluate the impact of the PPS on access and quality. Included among these are:

- The Beneficiary Impact Study is an ongoing intramural research effort, consisting of a series of analyses of longitudinal changes in access and quality-related indicators available from Medicare administrative data files. These analyses will compare data from pre-PPS hospital bills to data from hospital bills paid under the PPS, in order to provide observations on the effects of the new system on several measures of access and quality, such as the concentration of services by hospital, utilization rates, in-hospital and post-discharge mortality rates, re-hospitalization rates, and rates of discharge from hospitals to other hospitals and SNF's. More detail on these analyses is provided later in this chapter.
- HCFA has funded a project to assess the Impact of the PPS on the Quality of Inpatient Care, which will include an analysis of quality indicators in three time periods--before the implementation of TEFRA cost limits, during the

period when TEFRA cost limits were in effect, and during the PPS period. Medical record abstracts from a sample of hospitals will be used to examine a variety of quality indicators, including in-hospital mortality, re-hospitalization rates, nosocomial infection rates, percentages of patients with second surgical procedures, transfer rates, and several additional process and outcome measures.

Initial results from these studies will be described in the next issue of the annual report.

Several additional projects are currently being implemented or planned for the purpose of refining and improving the evaluation of access and quality under the PPS in the longer run. Among these projects are the following:

- HCFA has funded a study of Costs, Outcomes, and Competition in the End-Stage Renal Disease (ESRD) Program, to evaluate the effect of the Medicare program's treatment of the ESRD population. As stated above, this group may be at higher risk of decreased access and quality of care because they require higher costs of treatment for a given type of case. Quality indicators to be examined in this study are to be based on detailed treatment data contained in HCFA's ESRD Management Information System, as well as the standard hospital bill data.
- HCFA has also funded a study of Non-Intrusive Outcome Measures, which is to examine refinements in the current methodology for measuring quality at the

hospital level. In this study, data abstracted from patient medical records will be used to investigate the validity of using hospital bill data to indicate changes in treatment patterns and quality of care.

The results of these studies are scheduled to be available in August 1986 and December 1987, respectively.

Other studies of the impact of the PPS on access and quality would focus on the efficacy of various treatment patterns in determining acceptable patient outcomes, the trade-off between efficiency and quality, and the impact on vulnerable population subgroups, such as persons in nursing homes, the very old, complicated cases, and the aged poor.

#### **Inspection Activities**

The Department's Office of the Inspector General (OIG) works closely with HCFA to provide findings to the Department as to the vulnerabilities of the Medicare system. The inspection process represents a proactive approach to:

- The identification of health care providers who may be engaged in fraudulent or abusive practices;
- The evaluation of reimbursement and coverage policy effects on selected health care services; and
- The measurement of HCFA's effectiveness in monitoring contractors in assuring appropriate payments under its programs.

Among the PPS-related inspection activities planned by the OIG are the following:

- An inspection to be conducted to determine HCFA's effectiveness in contracting with the PRO's and overseeing their peer review responsibilities.
- A number of inspection activities involving the use of DRG's in prospective payment, including an investigation of coding appropriateness for vulnerable DRG's, an evaluation of PRO DRG evaluations, and an effort to validate DRG assignments for a sample of bills at a sample of hospitals.

Additional activities may be undertaken as priorities adjust to the rapid changes occurring in the health care sector.

#### **Findings to Date**

At present, there are no objective data indicating that access to care has diminished or that the quality of care has declined due to prospective payment. A decrease in admissions and a significant decrease in the average length of stay have been observed (see Chapter 6), but there is no indication that patients are being denied access to needed health care. There is evidence of some increase in hospital discharges to post-hospital care, but the impact of this increase on the access to or quality of care has not yet been ascertained. There has been a larger than expected increase in the Medicare Case-Mix Index (see Chapter 6), but the implications of this increase for the quality of care are unclear. The changes that have occurred during the first year of the PPS indicate that hospitals are adjusting to the new system, and that this adjustment has been fairly smooth.

As the Department's efforts to monitor access and quality develop over time, the system's ability to detect and address problems in the short term should improve. In addition, the results of the studies described above, and the availability of additional data from other sources both within and outside of the Medicare program, should allow for the careful and systematic evaluation of the longer-term impact of the PPS on access and quality. The development of the monitoring process and results of evaluative studies will continue to be described in future annual reports.

#### Beneficiary Use of Inpatient Hospital Services

The impact of the PPS on Medicare beneficiaries' access to hospital care will be examined in future reports by comparing utilization measures for various beneficiary sub-populations before and after the implementation of the new payment system. The measures to be examined include diagnosis and procedure-specific discharge rates and average length of stay for aged, disabled, and end-stage renal disease (ESRD) beneficiaries, by age, sex, and race. Through the examination of these data, the PPS' impact both the extent and the pattern of access to care may be described.

## Methods

Data for the pre-PPS period are derived from the 1981 MEDPAR 20 percent sample discharge file. For the post-PPS period, data will be available on 100 percent of hospital discharges, from the new PATBILL file, which has replaced the MEDPAR file. Hospitalization rates per 1,000 Medicare beneficiaries are calculated by modified DRG category and also by major diagnostic category (MDC), as well as for specific selected diagnoses and procedures.

Developing and interpreting age-specific hospitalization rates by DRG presents a problem, because many DRG's are based on the age of the patient. For instance, consider the two DRG's below:

<u>DRG</u>	<u>Name</u>
180	Gastrointestinal obstruction, Age greater than 69 and/or secondary diagnosis; and
181	Gastrointestinal obstruction, Age less than 70 without secondary diagnosis.

Separate studies of age-specific rates for these DRG's make no sense by themselves. Persons aged 70 and over will fall into DRG 180 whether a secondary diagnosis is present or not, but persons aged 65-69 will only be placed in DRG 180 if a secondary diagnosis is present. If the two DRG's are combined, however, then age-related variations can be examined without regard to secondary diagnosis. Therefore, to facilitate interpretation of the data, 150 DRG's were combined with

other DRG's in which age was a differentiating factor. For the rest of this section of the chapter, references to DRG categories are in terms of these "grouped" DRG's. The initial stages of this analysis will center on the 20 most common DRG's and the 10 most common MDC's. The 20 most common grouped DRG's accounted for 48 percent of all Medicare discharges in 1981. The 10 most common MDC's accounted for 83 percent of Medicare discharges in that year.

The tables that follow show DRG and MDC discharge rates by demographic characteristics within Medicare eligibility category. Medicare aged beneficiaries are split into five age groups (65-69, 70-74, 75-79, 80-84, 85 and over); males and females; and two racial groups (white and other than white). Disabled beneficiaries are also split into five age groups (less than 35, 35-44, 45-54, 55-59, 60-64), as well as by sex and race. Data for ESRD patients are examined without regard to demographic category, due to the small number of beneficiaries in this group (64,000 in 1981).

Discharge rates from the 1981 MEDPAR file were developed using two additional adjustment factors. In 1981, the MEDPAR file had a shortfall of about 70,000 records out of about 2,000,000. As there is no known bias in the missing records, discharge rates were adjusted upward by about 3.5 percent to account for this shortfall. In addition, about 4 percent of discharges could not be categorized into meaningful diagnoses, and were thus given "uncodable" DRG codes of 469 or 470. Again, in the absence of any known systematic bias, rates were adjusted upward to account for these uncodable discharges. It should also be noted that discharge rates for DRG's or MDC's which are sex-specific were calculated based on sex-specific population rates. For example, females were excluded from the denominator in the calculation of rates for transurethral prostatectomy. Thus,

although transurethral prostatectomy is the 19th most common DRG category among the aged, it has the fifth highest discharge rate per 1,000 beneficiaries.

### **Pre-PPS Utilization Patterns**

Trends and regional variations in hospitalization rates for the Medicare program have been examined in some detail by Lubitz and Deacon (1982) and Gornick (1982). Their findings are summarized below, in order to provide some background on trends in discharge rates and average length of stay prior to the implementation of the PPS. This is followed by some preliminary analyses of DRG-specific hospitalization rates in 1981, the year used to set the initial DRG weighting factors.

From the beginning of the Medicare program (in 1967) through 1981, there was a steady increase in the number of discharges per 1,000 Medicare beneficiaries. From 1967 to 1977, the discharge rate rose by 29.2 percent, at an annual rate of 2.6 percent. The increase was greater for surgical discharges than for non-surgical discharges (36.4 percent to 25.9 percent), but this difference was not enough to greatly change the overall proportion of non-surgical discharges. Surgical discharges accounted for 32 percent of all discharges in 1967 and 34 percent in 1977. During this same time, average length of stay decreased at a steady rate. Length of stay decreased from 13.8 days in 1967 to 10.9 days in 1977, a change of 21 percent. Non-surgical length of stay decreased by 23.7 percent, while surgical length of stay decreased by 16.4 percent. The net result of an increasing discharge rate and a decreasing average length of stay was a virtually stable rate of days of care per beneficiary. Total inpatient days of care per 1,000 beneficiaries was only 2.1 percent higher in 1977 than in 1967.

Diagnostic and surgical procedure-specific hospitalization rates for the aged also were examined for the years 1970 to 1977. During this time, the discharge rate rose from 306.8 to 374.4 per thousand beneficiaries, an increase of 22.0 percent. Together, increases in diseases of the circulatory system, malignant neoplasms, and diseases of the nervous system and sense organs accounted for over one-half (54.7 percent) of the increase in the overall discharge rate.

There were wide variations in discharge rate trends for specific procedures. For all surgical procedures, the discharge rate increased from 89.6 per thousand in 1970 to 118.8 per thousand in 1977, an increase of 32.6 percent. Some procedures had much greater than average increases in discharges. Rates for vascular and cardiac surgery (152.2 percent), thoracic surgery (70.6 percent), and biopsies (75.9 percent) all increased more than twice as fast as the overall rate. Together, these three types of procedures accounted for 13.7 percent of all surgical procedures in 1970. However, they accounted for 44.2 percent of the increase in surgical procedures between 1970 and 1977.

Average length of stay for all surgical procedures decreased by 9.7 percent between 1970 and 1977, from 14.5 days to 13.1 days. Most individual procedures had similar declines in length of stay. Extraction of lens and repair of inguinal hernia, both procedures with relatively short length of stay, were among the procedures with the greatest decrease in length of stay. Stays for extraction of lens decreased from 7.8 days in 1970 to 4.6 days in 1977, a 41.0 percent decrease; for repair of inguinal hernia, length of stay decreased from 10.2 days to 7.6 days, or 25.5 percent. On the other hand, length of stay for resection of the small intestine or colon decreased by only 4.8 percent, and in 1977 was still 21.6 days--65 percent longer than the average surgical stay.

Changes in discharge rates varied by age. Persons aged 65 to 74 had the greatest increase in discharge rate (29 percent) between 1967 and 1977, while persons aged 85 and over experienced a 23 percent increase in the discharge rate.

Finally, discharge rate and length of stay exhibited distinctive and consistent variations by geographical area. Discharge rates have typically been highest in the South: in 1977, the discharge rate in the South (368 per 1,000) was 22 percent higher than the rate for the Northeast. Average length of stay was highest in the Northeast, however, where the average stay of 13.3 days was almost 50 percent greater than the 8.9 days in the West. During the period 1967 to 1977, the Northeast experienced the greatest increase in the discharge rate (39 percent), while the West experienced the greatest decrease in length of stay (25 percent).

The preceding summary is an attempt to describe some basic trends in Medicare hospitalization rates prior to the implementation of the PPS. In general, discharge rates have increased while average length of stay has decreased (see Chapter 6). This has been true for most diagnostic and procedure categories. The next section presents data on a DRG-specific basis for 1981, the year used to set the initial DRG weights.

#### **Aged Enrollees**

Table 7.2 shows discharge rates per 1,000 aged Medicare beneficiaries by DRG category for 1981. In 1981, the overall discharge rate for aged beneficiaries was 362, representing a 9.2 percent increase from 1977. Discharge rates were strongly related to age, increasing with each 5-year age group. Persons aged 85 and over

Table 7.2

## DISCHARGES PER 1000 AGED BENEFICIARIES: 1981

GROUPED DRG**		TOTAL	65-69	70-74	75-79	80-84	85+	MALE	FEMALE	WHITE	OTHER
	NAME										
	ALL DISCHARGES	361.9	280.8	335.4	403.1	466.0	498.3	270.0	343.0	367.3	316.1
182	ESOPHAGITIS, GASTROENT. & MISC. DIG.	17.5	13.2	15.9	20.0	23.5	24.3	13.6	20.2	18.0	12.9
132	ATHEROSCLEROSIS	16.0	11.1	14.0	17.6	22.7	26.8	17.8	14.8	16.4	12.3
127	HEART FAILURE AND SHOCK	14.9	7.2	11.4	16.8	25.3	33.9	15.8	14.3	14.8	16.6
39	LENS PROCEDURES	13.5	8.3	12.7	17.8	20.3	15.9	11.8	14.6	13.9	10.1
89	SIMPLE PNEUMONIA AND PLEURISY	10.7	5.7	7.9	11.2	16.7	26.1	12.8	9.2	10.9	8.7
14	SPEC. CEREBROVASC. DISORD. EX. T.A.	10.3	5.1	8.1	12.3	17.3	21.3	11.0	9.9	10.1	12.8
88	CHRONIC OBSTRUCTIVE PULMONARY DIS.	9.3	8.6	10.4	10.8	9.3	5.9	14.8	5.6	9.7	5.2
121	CIRCULATORY DISORDERS WITH AMI	9.3	7.6	9.1	10.5	11.4	10.2	12.1	7.4	9.6	6.2
468	UNRELATED OR PROCEDURE	7.9	6.8	7.8	8.9	9.1	8.6	9.6	6.8	8.0	7.5
294	DIABETES	6.9	6.3	7.1	8.0	7.6	5.7	5.6	7.8	6.5	11.1
138	CARDIAC ARRHYTHMIA & CONDUCT. DIS.	6.9	4.8	6.2	8.0	9.5	10.0	7.4	6.5	7.0	5.6
140	ANGINA PECTORIS	6.4	5.8	6.6	7.1	7.4	5.7	6.7	6.2	6.6	4.6
243	MEDICAL BACK PROBLEMS	6.3	5.2	5.8	6.9	8.0	8.3	4.6	7.5	6.6	3.3
96	BRONCHITIS & ASTHMA	6.2	5.5	6.1	6.6	7.0	7.0	6.0	6.3	6.4	4.7
130	PERIPHERAL VASCULAR DISORDERS	5.2	3.7	4.8	5.8	6.9	8.3	6.0	4.7	5.3	4.8
15	TRANSIENT ISCHEMIC ATTACKS	5.2	3.1	4.5	6.2	8.1	8.8	5.4	5.1	5.4	3.8
320	KIDNEY AND URINARY TRACT INFECT.	5.1	2.8	4.0	5.7	8.2	10.6	4.2	5.7	5.1	5.0
134	HYPERTENSION	5.0	4.2	4.9	5.7	6.0	5.4	3.6	6.0	4.7	8.7
336	TRANSURETHRAL PROSTATECTOMY*	11.8	8.8	12.2	14.4	15.4	13.2	11.8	---	12.0	9.9
82	RESPIRATORY NEOPLASMS	4.7	5.2	5.3	4.9	3.5	2.3	8.1	2.4	4.7	4.5

\* Transurethral Prostatectomy rates are calculated for male beneficiaries only.

\*\* 150 DRG's were combined with other DRG's in which age was a differentiating factor.

had a discharge rate which was 78 percent greater than persons aged 65 to 69 (498 and 281, respectively). The discharge rate for males was 14 percent higher than for females, and the discharge rate for white persons was 16 percent higher than for persons of other races.

Grouped DRG's are listed in Table 7.2 in descending order of overall frequency. Together, the top 20 DRG's accounted for 48 percent of all discharges for the aged population. The most common DRG's for the aged population were: (1) esophagitis; (2) atherosclerosis; and (3) heart failure and shock. However, this was not consistent across all age groups. For instance, although heart failure and shock was the third most common DRG overall, it was only the seventh most common DRG for the 65 to 69 age group. Among the very old (persons 85 and over), it was the most common DRG.

The effect of age on discharge rate varied considerably across DRG's. For some DRG categories, discharge rates rose rapidly with age. For pneumonia and pleurisy, specific cerebrovascular disorders, heart failure and shock, and kidney and urinary tract infections, the oldest persons had discharge rates which were four to five times as great as those for the youngest persons. However, discharge rates did not always rise with age: for chronic obstructive pulmonary disease, diabetes, and angina pectoris, discharge rates seemed to follow an inverted "u" pattern, with the highest rates in the 75 to 79 or 80 to 84 age ranges. Finally, among the most common DRG's, there was one--respiratory neoplasms--for which discharge rates declined directly with age. This is probably due to the high mortality rate for this disease--people with lung cancer tend not to survive to the oldest age groups.

Discharge rates by sex followed generally expected patterns. Males had discharge rates for respiratory neoplasms and chronic obstructive pulmonary disease which were 3.4 times and 2.6 times the respective rates for females. On the other hand, female discharge rates for hypertension and medical back problems were more than 60 percent greater than the comparable rates for males.

White persons had discharge rates for medical back problems, chronic obstructive pulmonary disease, and circulatory disorders with acute myocardial infarction (AMI) that were over 50 percent greater than the rates for persons of other races. Conversely, non-white persons had much higher discharge rates for diabetes and hypertension.

Table 7.3 shows the average length of stay for aged Medicare beneficiaries for the DRG categories listed in Table 7.2. Overall, the average length of stay in 1981 was 10.3 days, but this varied considerably by DRG. Two DRG's, unrelated operating room procedures and specific cerebrovascular disorders, had average lengths of stay greater than 15 days. Lens procedures had by far the shortest length of stay, at 3.2 days. Other frequent DRG's with average lengths of stay less than 8 days were esophagitis, cardiac arrhythmia, angina pectoris, and transient ischemic attacks.

For all discharges combined, there appeared to be an age effect on length of stay, with persons aged 85 and over having an average length of stay which was 24 percent higher than persons aged 65 to 69 (11.7 days and 9.4 days, respectively). This relation to age was fairly consistent across DRG's. The one exception was circulatory disorders with AMI, where there was very little difference in average

Table 7.3

## AVERAGE LENGTH OF STAY FOR AGED BENEFICIARIES: 1981

GROUPED DRG*		TOTAL	65-69	70-74	75-79	80-84	85+	MALE	FEMALE	WHITE	OTHER	LIVE	DEAD
#	NAME												
	ALL DISCHARGES	10.3	9.4	9.9	10.5	11.1	11.7	10.0	10.6	10.2	11.8	10.2	13.5
182	ESOPHAGITIS, GASTROENT. & MISC. DIG.	7.1	6.4	6.8	7.3	7.7	8.3	6.7	7.3	7.1	8.0	7.1	13.5
132	ATHEROSCLEROSIS	9.1	7.6	8.6	9.3	10.0	10.5	8.5	9.6	9.0	10.2	9.0	10.3
127	HEART FAILURE AND SHOCK	10.7	10.0	10.4	10.6	11.1	11.3	10.2	11.2	10.7	11.4	10.6	11.6
39	LENS PROCEDURES	3.2	3.0	3.1	3.2	3.4	3.5	3.1	3.3	3.2	4.0	3.2	10.9
89	SIMPLE PNEUMONIA AND PLEURITIS	11.2	10.1	10.7	11.1	11.8	12.0	11.0	11.4	11.1	12.1	11.2	11.4
14	SPEC. CEREBROVASC. DISORD. EX. TIA	15.4	14.8	15.4	15.4	15.9	15.6	14.8	15.9	15.3	16.8	16.1	12.5
88	CHRONIC OBSTRUCTIVE PULMONARY DIS.	10.1	9.6	10.1	10.4	10.8	10.6	9.7	10.9	10.1	10.9	9.9	14.1
121	CIRCULATORY DISORDERS WITH AMI	11.7	11.5	11.6	11.8	12.0	11.6	11.3	12.1	11.7	11.7	13.0	6.2
468	UNRELATED OR PROCEDURE	17.3	15.1	16.5	17.7	19.6	20.9	17.3	17.2	16.9	20.4	16.5	26.4
294	DIABETES	10.2	9.6	9.8	10.5	11.0	11.6	9.7	10.4	10.1	11.0	10.1	13.6
138	CARDIAC ARRHYTHMIA & CONDUCT. DIS.	7.7	6.7	7.2	7.9	8.2	9.0	7.4	7.8	7.6	9.2	7.6	9.7
140	ANGINA PECTORIS	7.3	6.6	7.2	7.6	7.7	8.1	6.7	7.7	7.2	8.2	7.2	9.1
243	MEDICAL BACK PROBLEMS	10.0	9.0	9.7	10.4	10.9	11.2	9.1	10.4	10.0	10.5	10.0	17.6
96	BRONCHITIS & ASTHMA	8.5	7.9	8.2	8.5	9.3	9.6	8.0	8.8	8.5	8.8	8.4	13.0
130	PERIPHERAL VASCULAR DISORDERS	10.5	9.4	10.0	10.7	11.0	12.0	9.9	11.0	10.2	12.7	10.4	11.5
15	TRANSIENT ISCHEMIC ATTACKS	7.7	6.8	7.4	7.6	8.2	9.1	7.3	8.1	7.7	8.6	7.6	17.1
320	KIDNEY AND URINARY TRACT INFECT.	9.2	7.5	8.2	9.4	10.3	10.5	9.2	9.2	9.1	10.1	9.1	12.4
134	HYPERTENSION	8.3	7.6	7.8	8.6	9.3	9.4	8.1	8.4	8.0	9.9	8.2	11.7
336	TRANSURETHRAL PROSTATECTOMY	9.5	8.3	8.8	9.6	10.9	13.1	9.5	---	9.3	11.2	9.4	19.4
82	RESPIRATORY NEOPLASMS	11.7	11.2	11.8	12.2	12.4	12.6	11.4	12.5	11.6	13.4	11.3	13.5

\* 150 DRG's were combined with other DRG's in which age was a differentiating factor.

length of stay across age categories. Sex and race were also related to lengths of stay: females had an average length of stay which was 6 percent greater than that for males (10.6 and 10.0 respectively), and non-white persons had an average length of stay 16 percent greater than did white persons.

Discharge status (live or dead) was strongly related to average length of stay. In general, discharges ending in death were longer than live discharges: live discharges averaged 10.2 days, while discharges ending in death averaged 13.5 days. This was true for most DRG categories, with the exceptions being specific cerebrovascular disorders and circulatory disorders with AMI. In both of these DRG's, discharges ending in death had average lengths of stay which were shorter than for live discharges.

Over 18 percent of the discharges for respiratory neoplasms, circulatory disorders with AMI and specific cerebrovascular disorders ended in the death of the patient. On the other hand, lens procedures, transurethral prostatectomy, and medical back problems all had discharge mortality rates of less than 1 percent.

#### **Disabled Enrollees**

Table 7.4 presents the discharge rates for disabled Medicare beneficiaries by DRG. Overall, the discharge rate for disabled persons was 388 per 1,000, slightly higher than for aged persons. The 20 most common DRG's accounted for 47 percent of all discharges in this group. There was considerable overlap between the most common DRG's for the aged and for the disabled: fifteen DRG's appear in both listings. The five DRG's which were most common among disabled

Table 7.4  
DISCHARGES PER 1000 DISABLED BENEFICIARIES: 1981

GROUPED DRG*		TOTAL	35	35-44	45-54	55-59	60-64	MALE	FEMALE	WHITE	OTHER
	NAME										
	ALL DISCHARGES	387.7	255.8	317.3	400.6	411.4	443.6	362.3	431.9	400.1	330.6
182	ESOPHAGITIS, GASTROENT. & MISC. DIG.	18.1	10.5	16.3	20.0	19.1	20.0	14.2	24.9	19.4	12.5
132	ATHEROSCLEROSIS	17.2	0.8	6.6	18.6	22.5	23.4	19.9	12.6	18.7	10.0
88	CHRONIC OBSTRUCTIVE PULMONARY DIS.	15.0	0.7	3.2	12.3	18.9	24.6	16.5	12.3	16.7	6.3
430	PSYCHOSES	12.3	35.8	22.3	11.4	5.7	4.0	11.3	14.0	12.5	11.7
294	DIABETES	11.9	6.4	8.7	12.5	14.1	13.4	9.3	16.4	11.0	16.3
243	MEDICAL BACK PROBLEMS	11.2	5.2	13.8	15.3	11.8	9.4	9.4	14.4	12.0	7.8
140	ANGINA PECTORIS	10.8	0.5	4.9	13.5	13.4	13.7	11.6	9.5	11.7	6.9
96	BRONCHITIS & ASTHMA	9.9	4.0	5.9	10.6	11.7	12.2	7.8	13.5	10.2	8.6
127	HEART FAILURE & SHOCK	9.6	0.6	2.8	8.4	11.8	15.1	9.9	9.1	9.3	10.9
468	UNRELATED OR PROCEDURE	9.0	6.7	7.6	9.0	9.1	10.4	8.0	10.7	9.1	8.6
121	CIRCULATORY DISORDERS WITH AMI	8.4	0.4	3.4	8.8	11.0	11.5	10.0	5.5	8.9	5.8
89	SIMPLE PNEUMONIA & PLEURISY	7.8	4.1	5.1	7.3	8.7	10.3	7.8	8.0	8.2	6.3
438	ALC & SUBS INDUCED ORG MENTAL SYN	6.4	4.3	9.1	9.2	5.8	4.6	8.8	2.3	6.5	6.0
467	OTH FACTORS INFLUENCING HLTH STAT	5.9	7.6	6.2	5.3	5.6	5.7	5.3	7.0	6.0	5.5
24	SEIZURE & HEADACHE	5.7	11.0	8.5	6.3	3.7	3.5	5.4	6.3	5.6	6.2
134	HYPERTENSION	5.6	1.0	3.3	6.1	7.0	7.2	4.6	7.3	4.7	10.4
130	PERIPHERAL VASCULAR DISORDERS	4.8	1.2	2.7	4.7	6.0	6.4	4.8	4.8	5.1	3.7
143	CHEST PAIN	4.8	1.3	3.5	6.8	6.0	4.6	4.8	4.8	5.2	3.0
14	SPEC CEREBROVASC. DISORD. EX. TIA	4.7	0.5	1.8	3.5	5.9	7.7	5.0	4.3	4.5	6.0
138	CARDIAC ARRHYTHMIA & CONDUCT. DISORD	4.7	0.7	2.2	4.2	5.7	6.8	4.7	4.6	4.9	3.4

\*150 DRG's were combined with other DRG's in which age was a differentiating factor.

beneficiaries, but which did not appear among the most frequent DRG's for the aged, are psychoses, alcohol, and substance induced organic mental syndrome, other factors influencing health status, seizure and headache, and chest pain.

As was the case with aged Medicare beneficiaries, there seemed to be a direct relationship between age and discharge rates. Persons aged 60 to 64 had a discharge rate which was 73 percent greater than that for persons below the age of 35 (444 per 1,000 and 255 per 1,000, respectively). However, the mix of cases was considerably different across age groups. In particular, disabled enrollees in the under 35 age group were hospitalized for much different reasons than were older disabled persons. First, younger persons were rarely hospitalized for diagnosis in the chronic degenerative circulatory DRG categories. Atherosclerosis, chronic obstructive pulmonary disease, angina pectoris, heart failure and shock, circulatory disorders with AMI, specific cerebrovascular disorders, and cardiac arrhythmia are all DRG's for which the under age 35 group had discharge rates of less than one per 1,000. Second, younger persons were hospitalized much more frequently for problems relating to mental disorders, reflecting the fact that many of the disabled persons in this age group are disabled because of mental disorders--of those persons disabled as children, almost two-thirds are disabled due to mental, psychoneurotic, and personality disorders (Cormier, 1972). Nineteen percent of the discharges for this age group were for DRG's related to mental diseases and disorders of the nervous system, which are other common reasons for disability among the young.

The pattern of discharge rates by sex among disabled beneficiaries is the reverse of that which was observed among aged beneficiaries: females had an overall discharge rate which was 19 percent greater than the discharge rate for

males (432 per 1,000 and 362 per 1,000, respectively). The relationship between race and discharge rates was similar to that among the aged: white persons had discharge rates which were 21 percent greater than persons of other races. The primary exceptions to this pattern were hypertension and diabetes, for which white persons had lower discharge rates than persons of other races.

Average lengths of stay for disabled beneficiaries are shown in Table 7.5. Overall average length of stay for the disabled in 1981 was 9.8 days, one-half day lower than for the aged. Unlike the aged, there was no consistent relationship between length of stay and age. In fact, the longest average length of stay was found among persons under age 35. The average length of stay for mental diseases and disorders for this age group was 14.5 days.

Females had longer lengths of stay than did males (10.2 days and 9.5 days, respectively). Non-white persons had lengths of stay which were 1.2 days longer, on average, than those for white persons. Also, as was the case with the aged beneficiaries, discharges ending in death were associated with longer stays than were live discharges (14.1 days and 9.7 days, respectively).

#### **End-Stage Renal Disease Enrollees**

Table 7.6 presents the discharge rates and average lengths of stay for the 20 most common DRG's among End-Stage Renal Disease patients. There are no age, sex, or race breakdowns of the data, because the ESRD population is relatively small (64,000 in 1981), so that specific DRG rates for subgroups could be misleading.

Table 7.5

## AVERAGE LENGTH OF STAY FOR DISABLED BENEFICIARIES: 1981

GROUPED DRG*		TOTAL	1-35	35-44	45-54	55-59	60-64	MALE	FEMALE	WHITE	OTHER	LIVE	DEAD
	NAME												
	ALL DISCHARGES	9.8	10.1	9.7	9.4	9.8	10.0	9.5	10.2	9.6	10.8	9.7	14.1
182	ESOPHAGITIS, GASTROENT. & MISC. DIG.	6.8	5.7	6.6	6.7	7.0	7.1	6.5	7.2	6.8	7.4	6.8	10.6
132	ATHEROSCLEROSIS	7.2	7.1	6.1	6.6	7.4	7.5	6.8	8.2	7.0	8.5	7.2	8.3
88	CHRONIC OBSTRUCTIVE PULMONARY DIS.	9.9	12.0	9.5	9.3	10.3	9.9	9.5	11.0	9.9	10.2	9.7	16.5
430	PSYCHOSES	15.9	15.1	14.9	16.8	17.0	17.7	14.9	17.2	16.1	14.7	15.9	14.8
294	DIABETES	9.6	8.1	8.4	9.3	10.1	10.1	9.1	10.1	9.5	10.0	9.6	13.9
243	MEDICAL BACK PROBLEMS	8.9	7.7	8.4	8.9	8.8	9.4	8.1	9.8	8.7	10.2	8.9	17.5
140	ANGINA PECTORIS	6.4	5.6	5.6	6.0	6.6	6.7	5.9	7.4	6.2	7.7	6.4	10.3
96	BRONCHITIS & ASTHMA	7.9	6.3	7.3	7.7	8.0	8.2	7.5	8.3	8.0	7.3	7.8	16.9
127	HEART FAILURE & SHOCK	9.9	9.1	10.9	9.7	9.7	10.1	9.3	11.1	9.8	10.6	9.8	12.3
468	UNRELATED OR PROCEDURE	16.1	15.2	16.4	15.5	16.0	16.6	16.5	15.4	15.5	18.6	15.5	30.0
121	CIRCULATORY DISORDERS WITH AMI	10.6	7.0	8.6	9.9	10.7	11.2	10.2	11.7	10.5	10.9	11.1	6.1
89	SIMPLE PNEUMONIA & PLEURISY	10.2	9.6	9.9	9.6	10.1	10.7	10.0	10.5	10.1	11.1	10.0	3.8
438	ALC & SUBS INDUCED ORG MENTAL SYN	9.0	8.9	8.3	9.0	9.4	9.3	8.9	9.7	8.8	10.0	9.0	9.4
467	OTH FACTORS INFLUENCING HLTH STAT	8.9	8.5	9.3	8.7	9.0	9.1	9.0	8.8	8.9	9.4	8.9	11.5
24	SEIZURE & HEADACHE	7.1	6.6	6.9	7.2	7.1	7.8	6.6	7.8	6.9	8.0	7.0	15.6
134	HYPERTENSION	7.8	6.6	6.5	7.7	7.9	8.2	7.4	8.3	7.7	8.1	7.8	11.1
130	PERIPHERAL VASCULAR DISORDERS	9.9	11.9	9.2	9.1	9.8	10.2	9.5	10.5	9.4	13.1	9.8	13.7
143	CHEST PAIN	5.3	4.3	4.4	5.3	5.3	5.8	5.1	5.8	5.2	6.3	5.3	8.0
14	SPEC CEREBROVASC. DISORD. EX. TIA	14.5	14.9	18.7	12.9	14.3	14.6	14.2	14.9	13.5	17.7	15.0	10.3
138	CARDIAC ARRHYTHMIA & CONDUCT. DISORD	7.0	7.1	4.9	7.1	7.2	7.1	7.1	6.9	6.8	7.9	6.9	10.7

\*150 DRG's were combined with other DRG's in which age was a differentiating factor.

Table 7.6

## DISCHARGE RATE AND AVERAGE LENGTH OF STAY FOR ESRD BENEFICIARIES: 1981

#	GROUPED DRG <sup>*</sup> NAME	DISCHARGES PER 1,000	AVERAGE LENGTH OF STAY		
			TOTAL	LIVE	DEAD
	ALL DISCHARGES	1,701.3	10.0	9.7	16.0
316	RENAL FAILURE WITH DIALYSIS	364.8	8.9	8.5	14.7
468	UNRELATED OR PROCEDURE	146.2	14.2	13.4	27.5
442	OTHER OR PROCEDURES FOR INJURIES	69.0	7.5	7.3	20.6
331	OTHER KIDNEY & URINARY TRACT DIAG.	62.6	7.5	7.5	11.4
452	COMPLICATIONS OF TREATMENT	49.0	8.2	8.2	13.3
182	ESOPHAGITIS, GASTROENT. & MISC. DIG.	42.6	6.6	6.4	19.8
315	OTHER KIDNEY & URIN. TRACT OR PROC.	42.1	10.9	10.4	30.9
294	DIABETES	41.8	8.9	8.7	10.8
127	HEART FAILURE & SHOCK	40.5	7.7	7.3	13.1
302	KIDNEY TRANSPLANT	40.1	28.6	28.5	38.3
188	OTHER DIGESTIVE SYSTEM DIAGNOSES	34.8	8.0	7.9	9.3
296	NUTRITIONAL & MISC METABOLIC DISORD.	28.3	7.1	6.6	22.1
89	SIMPLE PNEUMONIA & PLEURISY	24.7	9.7	9.3	13.2
174	G.I. HEMORRHAGE	23.8	8.8	8.8	8.6
132	ATHEROSCLEROSIS	23.8	7.3	7.4	4.9
467	OTH FACTORS INFLUENCING HLTH STAT	23.7	8.3	8.0	15.3
112	VASC PROC EX. MAJOR RECONSTRUCTION	22.7	9.2	9.2	11.1
134	HYPERTENSION	19.4	6.9	6.7	11.3
140	ANGINA PECTORIS	18.5	5.7	5.6	15.3
39	LENS PROCEDURES	17.5	3.7	3.7	----

\*150 DRG's were combined with other DRG's in which age was a differentiating factor.

Discharge rates for persons with ESRD were extremely high, reflecting the fact that these persons are eligible for Medicare by virtue of their illness. Their discharge rate of 1,701 per 1,000 was 4.4 times as great as that for disabled persons and 4.7 times as great as that for aged persons. Not surprisingly, the most common DRG for this population was renal failure with dialysis; DRG's relating to diseases and disorders of the kidney and urinary tract accounted for 32 percent of all discharges for ESRD beneficiaries. However, even omitting these DRG's, ESRD beneficiaries were hospitalized about three times as often as were other Medicare beneficiaries. Many of the diagnoses common in this population were also common among the aged and disabled, such as esophagitis, diabetes, heart failure and shock, pneumonia, atherosclerosis, and hypertension. Other diagnoses common to ESRD patients were related to kidney failure and its consequences. These include other digestive system diagnoses and nutritional and miscellaneous metabolic disorders. In addition, vascular procedures except major reconstruction probably is common among ESRD patients because it includes most of the procedures relating to the repair and/or replacement of the shunt apparatus used in dialysis.

Lengths of stay for ESRD patients were similar to those for other Medicare beneficiaries. The average length of stay of 10.0 days was somewhat longer than for disabled persons and somewhat shorter than for aged persons. The longest average length of stay among the most frequent DRG's was for kidney transplants (about 29 days). Average lengths of stay of less than 7 days were found for lens procedures (3.7 days), esophagitis (6.6 days), and hypertension (6.9 days). Discharges ending in death involved longer stays than did live discharges (16.0 days compared with 9.7 days). This was consistent with findings for both aged and disabled beneficiary discharges.

## **Utilization Summary**

In summation, the pre-PPS Medicare statistical data from 1967 through 1981 show several clear trends in beneficiary utilization. Admissions were increasing and length of stay decreasing for aged, disabled, and ESRD beneficiaries overall, and similar trends are evident for the most common DRG's. When data for FY 1984 and future years are available, it will be necessary to find a way to distinguish between the secular trend already established and subsequent increases or decreases in utilization which may be attributed to changes in the Medicare payment system.

### **Outcomes: Rehospitalizations and Deaths**

The measurement of changes in the outcome of care is an important aspect of the evaluation of the impact of prospective payment on Medicare beneficiaries. A certain number of adverse outcomes may be expected for any group of hospitalized patients, even if the care provided is appropriate. However, if the incidence of adverse outcomes increases over time, or is greater than expected for certain conditions, types of hospitals, or kinds of patients, then additional investigation is warranted to determine if the quality of care has been adversely affected.

The most basic outcome measure is deaths that occur in connection with a hospitalization. Specifically, this type of analysis would focus on the percent of patients who die in the hospital or shortly after discharge. Baseline information is presented in this report, for future comparison with the experience under prospective payment. Future reports will analyze trends in these indicators, as PPS data

become available. Hospital stays associated with specific DRG categories, surgical procedures, and diagnoses will be chosen for analysis, based on their frequency, inherent risk, and the degree to which it may be expected that poor patient management might result in fatal outcomes.

The extent of rehospitalization following discharge is also an important outcome measure. An increased rate of rehospitalization might indicate an increase in the presence of complications following treatment, or might be the result of inappropriate early discharges. It should be emphasized, however, that an increase in the rehospitalization rate would provide only indirect evidence that a problem may exist, and would have to be evaluated in the context of information available from other sources.

### **Methods**

The basis for the mortality and rehospitalization studies described above will be a person-level file constructed from Medicare hospital bill records. The analysis will focus on selected DRG categories, diagnoses, and surgical procedures. A partial list of surgical procedures to be examined might include transurethral prostatectomy, cholecystectomy, inguinal hernia repair, coronary bypass surgery, reduction of fracture of the femur, total hip replacement, and other arthroplasty of the hip. Baseline information on these procedures is taken from studies previously conducted (Lubitz and Riley, 1984; Riley and Lubitz, 1985), and is described below. The remaining types of cases to be included in the study will be chosen on the basis of several factors: they must be reasonably common and of a sufficiently serious nature so that death or additional hospitalization are relatively

frequent; and they must also be types of cases for which patient outcomes are sensitive to the quality of patient care. It is anticipated that a total of approximately 25 case types will be selected for the study, based on a combination of critical DRG's, diagnoses, and surgical procedures.

### **Baseline Data**

Table 7.7 presents in-hospital mortality rates for the aged, non-ESRD beneficiary population in 1981, for all discharges and for the 20 most common grouped DRG categories separately, by age, sex, and race. The overall in-hospital mortality rate was 5.7 percent for these beneficiaries, although there is a great deal of variation in these rates by DRG, as one would expect. Mortality rates increased with age for all DRG's, and those for men generally exceeded those for women (mortality overall was 6.6 percent for men and 5.0 percent for women). The mortality rate for whites overall was less than that for patients of other races (5.6 percent vs. 6.5 percent). The overall in-hospital death rate for disabled non-renal beneficiaries was 2.8 percent, with a large amount of variation among specific DRG's (see Table 7.8). Mortality tended to slightly increase with age in this group for most procedures, although the under 35 age group often exhibited a rather high death rate relative to other age groups. In comparison, ESRD beneficiaries exhibited an overall mortality rate of 4.9 percent (data not shown), which appears quite low, given their generally poor health status. This illustrates one of the problems in interpreting discharge mortality rates. Although ESRD beneficiaries have a very high annual death rate, their rate of hospitalization is also very high, resulting in only a moderately high discharge mortality rate.

Percent of In-Hospital Deaths Among Aged Beneficiaries, for All DRGs and  
the 20 Most Common DRGs, 1981.

DRG No.	DRG NAME	TOTAL	65-69	70-74	75-79	80-84	85+	MALE	FEMALE	WHITE	OTHER
	TOTAL	5.7%	3.8%	4.7%	5.6%	7.0%	9.6%	6.6%	5.0%	5.6%	6.5%
182	ESOPHAGITIS, GASTROENTER. & MISC. DIGEST.	1.1	.6	.8	1.0	1.4	2.3	1.4	.9	1.0	1.5
130	ATHEROSCLEROSIS	5.6	2.9	4.2	5.5	6.8	10.4	5.9	5.4	5.6	5.7
127	HEART FAILURE & SHOCK	11.3	8.2	9.0	10.6	12.2	15.6	12.0	10.9	11.5	9.3
039	LENS PROCEDURES	.1	.1	.1	.1	.1	.1	.1	.08	.1	.1
089	SIMPLE PNEUMONIA & PLEURISY	10.9	6.1	7.7	10.0	12.5	16.7	12.1	9.8	10.9	10.9
014	SPEC CEREBROVASC DISORD. EXCEPT TIA	18.2	13.5	15.2	17.0	20.1	24.7	18.0	18.3	18.3	17.2
088	CHRONIC OBSTRUCTIVE PULMONARY DIS.	5.8	4.0	5.4	6.4	7.9	10.6	6.4	4.8	5.8	5.8
121	CIRCULATORY DISORDERS WITH AMI	19.0	13.1	16.1	20.1	24.4	31.2	18.2	19.9	19.1	17.2
468	UNRELATED OR PROCEDURE	7.1	5.0	6.1	7.6	9.4	13.1	7.8	6.9	7.2	8.0
294	DIABETES	2.9	1.6	2.3	3.1	4.1	7.1	3.4	2.7	2.9	3.2
138	CARDIAC ARRHYTHMIA & CONDUCT. DISORD.	4.2	2.5	3.3	4.2	5.0	7.3	4.9	3.6	4.1	5.0
140	ANGINA PECTORIS	1.1	.6	.9	1.2	1.8	2.3	1.4	.9	1.1	1.1
423	OTHER INFECTIOUS & PARASITIC DIS.	.6	.3	.3	.6	.9	1.3	.9	.5	.6	.7
096	BRONCHITIS & ASTHMA	1.2	.8	.9	1.0	1.4	2.9	1.6	.9	1.2	1.2
130	PERIPHERAL VASCULAR DISORDERS	5.1	2.5	3.5	5.2	6.3	9.9	6.0	4.2	5.1	4.5
015	TRANSIENT ISCHEMIC ATTACKS	1.0	.4	.9	.8	1.2	1.7	1.2	.9	1.0	1.3
320	KIDNEY & URINARY TRACT INFECTIONS	2.3	.9	1.6	1.9	3.1	4.1	3.0	2.0	2.3	2.9
134	HYPERTENSION	2.0	1.1	1.6	2.0	2.4	4.6	2.7	1.7	2.0	2.0
336	TRANSURETHRAL PROSTATECTOMY	.5	.2	.3	.5	.7	1.7	.5	---	.5	.6
082	RESPIRATORY NEOPLASMS	19.3	17.4	19.4	20.5	21.9	22.9	20.5	16.5	19.5	18.1

\*\* Less than 0.1 percent

Percent of In-Hospital Deaths Among Disabled Beneficiaries, for All DRGs  
and the 20 Most Common DRGs, 1981.

DRG No.	DRG NAME	TOTAL	35- 44	35-44	45-54	55-59	60-64	MALE	FEMALE	WHITE	OTHER
	<b>TOTAL</b>	<b>2.8%</b>	<b>.9%</b>	<b>1.4%</b>	<b>2.3%</b>	<b>1.1%</b>	<b>3.8%</b>	<b>3.1%</b>	<b>2.3%</b>	<b>2.8%</b>	<b>3.0%</b>
	182 ESOPHAGITIS, GASTROEN. & MISC. DIGEST	.5	.6	.4	.5	.7	.4	.6	.4	.5	.7
	132 ATHEROSCLEROSIS	2.4	1.8	.9	1.6	2.3	1.2	2.6	1.9	2.4	2.9
	088 CHRONIC OBSTRUCTIVE PULMONARY DISEASE	3.3	4.1	2.2	2.4	3.1	3.8	1.5	2.8	3.3	3.7
	430 PSYCHOSIS	.2	.8	.0	.3	.1	.7	.2	.1	.1	.2
	294 DIABETES	1.3	1.1	1.2	1.3	1.3	1.4	1.7	.9	1.3	1.3
	243 MEDICAL BACK PROBLEMS	.1	.0	.0	.2	.2	.1	.8	.2	.1	.1
7-34	140 ANGINA PECTORIS	.5	.0	.6	.2	.7	.5	.5	.6	.5	.5
	096 BRONCHITIS & ASTHMA	.6	.0	1.0	.6	.5	.7	.7	.5	.7	.1
	127 HEART FAILURE & SHOCK	6.8	9.5	7.6	5.4	6.3	7.5	6.7	6.8	7.1	6.8
	468 UNRELATED OR PROCEDURE	3.6	1.5	1.1	3.1	3.1	5.5	4.2	2.9	3.5	3.8
	121 CIRCULATORY DISORDERS WITH AHI	10.2	11.1	6.8	8.0	8.3	13.1	10.1	10.8	10.5	11.7
	089 SIMPLE PNEUMONIA & PLEURISY	4.9	4.1	1.1	3.5	4.9	6.1	5.5	3.9	4.7	6.2
	438 ALC & SUBS INDUCED ORG MENTAL SYNDROME	.5	.0	.3	.5	.3	.9	.6	1.1	.5	.6
	467 OTH FACTORS INFLUENCING HLTH STATUS	2.8	.2	.9	2.7	3.1	4.8	1.1	2.4	2.9	2.2
	024 SEIZURE & HEADACHE	.5	.0	.5	.7	.5	.9	.6	.2	.5	.4
	134 HYPERTENSION	.8	1.6	.0	.6	.7	1.2	1.2	.6	.8	.8
	130 PERIPHERAL VASCULAR DISORDERS	1.7	.0	.5	.9	1.5	2.5	1.8	1.5	1.7	1.8
	143 CHEST PAIN	.5	1.1	.4	.2	.4	.9	.5	.5	.6	.4
	014 SPEC CEREBROVASC DISORDERS EXCEPT TIA	12.6	11.4	11.0	11.0	12.6	12.5	12.3	13.3	12.3	13.9
	138 CARDIAC ARRHYTHMIA & CONDUCT DISORDERS	2.6	2.1	.7	1.8	2.7	3.2	3.0	2.0	2.7	1.7

Table 7.8

Age and sex-specific mortality rates for the 1.5 months following surgery are shown in Table 7.9, for seven common surgical procedures in 1979 and 1980. There was considerable variation in mortality rates both within and among procedures. For example, overall mortality following reduction of fracture of the femur and other arthroplasty of the hip (which is usually performed in the presence of fracture) are 878 and 750 per 10,000 procedures, respectively, whereas mortality following inguinal hernia repair is only 121 per 10,000 procedures. Age-specific mortality rates are highest for coronary bypass surgery.

The death rates shown in Table 7.9 increased substantially with age for all operations. A typical example is transurethral prostatectomy, for which the mortality rate increased from 119 per 10,000 surgeries for 65-74 year old males to 269 per 10,000 for males 75-84 years old and 631 per 10,000 for males of age 85 and over. For most procedures, the death rate for men was greater than that for women in every age group, with the exception of coronary bypass at all ages and inguinal hernia repair among 65-74 year-olds. The difference in death rates by sex was especially large for reduction of fracture of the femur, with men experiencing approximately twice the mortality of women in the 1.5 months following surgery.

Baseline data on rehospitalization rates within 30 days of discharge are presented in Table 7.10 for several common surgical procedures, in terms of readmissions per 10,000 live discharges. Coronary bypass patients exhibited the highest readmission rates (1,432 readmissions per 10,000 live discharges), with rates for women higher than those for men (for example, 1,726 for women aged 65-74, and 1,289 for men in the same age group). Transurethral prostatectomy exhibited the second highest rehospitalization rate, (1,071 rehospitalizations per

Table 7.9

Average Annual Number of Deaths per 10,000 Procedures within 1.5 Months Following Surgery for Selected Procedures by Age and Sex, 1979 - 1980

Procedure and Sex	ICD-9-CM Codes	Age			85 and over
		All Ages	65-74	75-84	
Number of Deaths per 10,000 Procedures					
Prostatectomy (TUR) (Males only)	60.2	214	119	269	631
Cholecystectomy	51.2	372	210	534	1,157
Males		467	305	627	1,475
Females		320	156	486	1,019
Inguinal Hernia Repair	53.0, 53.1	121	58	176	447
Males		120	55	182	487
Females		134	90	138	307
Reduction, Fracture of femur		878	401	780	1,354
Males	79.05, 79.15	1,378	589	1,347	2,377
Females	79.25, 79.35	742	327	632	1,142
Coronary Bypass	36.1	615	571	975	1/
Males		507	480	723	1/
Females		868	788	1,475	1/
Total hip replacement	81.5	206	117	219	931
Males		226	145	297	1,014
Females		195	100	186	909
Other Arthroplasty of hip	81.6	750	347	684	1,270
Males		1,205	541	1,283	2,112
Females		626	275	536	1,085

1/ Data on coronary bypass for enrollees 85 years and over are excluded because of the small number of procedures.

Number of surgical patients undergoing rehospitalization within 30 days of discharge per 10,000 live discharges for selected procedures by age and sex, 1979-1980.

Number undergoing rehospitalization per 10,000 discharges

Procedure and sex	All ages	65-74	75-84	85 and over
Prostatectomy (TUR)	1,071	951	1,156	1,536
Cholecystectomy	806	681	969	1,286
Males	930	804	1,114	1,412
Females	738	611	893	1,207
Inguinal Hernia Repair	508	408	621	876
Males	510	409	639	925
Females	495	390	562	708
Coronary Bypass	1,633	1,557	2,310	1/
Males	1,481	1,400	2,217	1/
Females	1,999	1,942	2,513	1/
Reduction, Fracture of Femur	1,178	1,093	1,198	1,218
Males	1,418	1,286	1,387	1,647
Females	1,115	1,018	1,150	1,134
Total hip replacement	858	726	939	1,329
Males	850	691	998	1,742
Females	845	744	914	1,220
Other arthroplasty of hip	1,187	1,090	1,209	1,255
Males	1,505	1,205	1,680	1,693
Females	1,103	1,048	1,099	1,164

1/ Data on coronary bypass for enrollees 85 years and over are excluded because of the small number of procedures.

10,000 live discharges), despite the fact that this procedure has a relatively low mortality rate. In contrast, patients undergoing repairs of inguinal hernias exhibited a relatively low rehospitalization rate (508 readmissions per 10,000 live discharges).

Table 7.II indicates the number of surgical patients readmitted on the same day they were discharged, from the first stay. These figures represent an estimate of the incidence of transfers from one hospital to another. The highest transfer rate was exhibited by patients undergoing reduction of fracture of the femur (299.0 per 10,000 live discharges), followed by those undergoing other arthroplasty of the hip (269.3 per 10,000). These transfer rates contrast sharply with those for patients undergoing inguinal hernia repair (males only), prostatectomy (TUR), and cholecystectomy, for whom the transfer rates were 26.0, 51.8, and 58.5, respectively.

#### **Future Comparison Studies**

For selected case types, mortality rates will be computed on an annual basis, beginning in 1984, by age and sex. Rates will be computed separately for certain subgroups of the population who may be at higher risk, such as minority groups, the very old, and Medicaid (crossover) recipients. Selected hospital characteristics will be included in some analyses, such as separate rates for patients treated in teaching and non-teaching hospitals and those located in rural and urban areas. For the surgical procedures described above, baseline information is now available for 1979-1980. Baseline data for 1980-1983 will also be computed for additional conditions subject to analysis.

Table 7.11 Number of surgical patients rehospitalized on the day of discharge from the surgical stay per 10,000 live discharges, for selected procedures, 1979-1980.

Number undergoing rehospitalization per 10,000 discharges				
Procedure and sex	All ages	65-74	75-84	85 and over
Prostatectomy (TUR)	51.8	41.5	60.4	86.5
Cholecystectomy	58.5	52.9	61.4	72.2
Males	75.2	72.9	83.2	60.7
Females	49.4	41.5	59.2	71.0
Inguinal Hernia Repair	26.0	17.1	31.2	65.1
Males (only)				
Coronary Bypass	204.1	180.4	421.6	1/
Males	192.2	165.9	443.4	1/
Females	232.6	215.7	314.5	1/
Reduction, Fracture of Femur	299.9	269.7	321.5	293.8
Males	314.1	263.0	339.5	339.2
Females	296.1	272.3	316.9	285.0
Total Hip Replacement	126.1	103.0	150.8	205.7
Males	113.1	91.7	131.8	221.3
Females	132.9	106.2	159.1	200.0
Other Arthroplasty of Hip	269.3	231.7	272.1	298.8
Males	309.5	255.7	318.4	383.2
Females	258.8	231.1	261.2	281.3

1/ Data on coronary bypass for enrollees 85 years and over are excluded because of the small number of procedures.

One set of mortality rates will be computed for in-hospital deaths, and additional rates will be computed for deaths occurring within 1.5 months of surgery, or following hospital admission for non-surgical patients. Death rates within 1.5 months provide a better measure of treatment outcomes than do in-hospital death rates, but will require linkage of the hospital bill file with the Medicare enrollment file, to identify deaths occurring outside the hospital. Baseline data will be compared to future years' mortality rates under prospective payment, and trends in these rates will be examined. Trends must be carefully evaluated in the context of admission patterns--if, for example, admission rates increase under prospective payment because hospitals admit more simple, less expensive cases, then mortality rates may decrease; similarly, if discharge rates were to decrease because of reductions in inappropriate admissions, then mortality rates could increase. In the first case, decreased mortality (a positive outcome) would be due to excessive utilization (an undesirable effect), while, in the latter case, increased mortality (a negative outcome) would be due to better admission screening (a desirable effect).

Rehospitalization rates will be computed by age and sex, with separate rates to be computed for high-risk groups. Hospital characteristics will also be included in the analysis, as appropriate. Rehospitalization rates within 7 days and 30 days of discharge will be computed for baseline and subsequent years. Transfer rates to other hospitals will also be analyzed for selected case types.

Reasons for rehospitalization will also be closely followed. In particular, the incidence of readmissions for the same DRG or same diagnosis will be tracked. Also, certain DRG's and diagnoses associated with readmission may be indicative of

poor quality of care (e.g., nosocomial infections). The relationship between rehospitalization and length of stay will also be examined, for evidence of inappropriately early discharges.

Changes in the discharge rate to skilled nursing facilities (SNF's), intermediate care facilities (ICF's), and home health care will also be analyzed. These data are only available beginning with the implementation of the PPS in October of 1983; they thus cannot be compared to pre-PPS patterns. Discharges to SNF, ICF and home health care will also be analyzed by DRG and by hospital and patient type.

#### **Specialization Of Cases Within And Among Hospitals**

As mentioned above, the PPS may cause hospitals to specialize in cases in which they are most efficient, and thus treat a narrower variety of cases. Such concentration may improve care because of the correlation between higher volume and lower mortality identified in a number of studies of surgery (Flood, et.al., 1984 a and b; Luft, 1980; Luft, et.al., 1979; Riley and Lubitz, 1984). Table 7.12, from Riley and Lubitz (1984), shows evidence of a positive relationship between Medicare surgical volume and the percent of patients still alive 60 days after surgery for selected procedures. Based on a 20-percent sample of Medicare patients, this study shows contrasting patterns in the percent of selected operations performed in low-and high-volume hospitals. On the one hand, about half of all operations on the aged for reduction of fracture of the femur and resection of the intestine are done in low-volume hospitals (sample size less than 6 operations); on the other hand, operations for transurethral prostatectomy, coronary bypass, and total hip replacement are more concentrated in high-volume

Table 7.12

## CRUDE MORTALITY RATES BY ANNUAL SURGICAL VOLUME ON THE MEDICARE AGED FOR SPECIFIC PROCEDURES, 1979-1980

Uninflated Hospital Surgical Volume (VOLUME-SPECIFIC)		Prostatectomy (TRH)			Reduction, Fr of Femur			Repair of Inguinal Hernia					
		Sample		Discharges	% Dying within		Sample		Discharges	% Dying Within			
		No.	Percent	60 Days of Surg.	No.	Percent	60 Days of Surg.	No.	Percent	60 Days of Surgery	No.	Percent	
Total		56,316	100	3.0%	20,709	100	10.3%	33,016	100	1.5%	18,118	43	1.5
Less than 6		8,769	16	3.4	10,741	52	10.6	10,369	31	1.6	10,369	31	1.6
6-10		12,084	21	3.1	6,278	30	10.0	4,542	14	1.2	4,542	14	1.2
11-15		10,960	19	2.9	2,185	11	10.0	1,775	5	1.4	1,775	5	1.4
16-20		8,184	14	2.8	904	4	10.7	2,192	7	1.0	2,192	7	1.0
More than 20		16,356	29	2.7	601	3	8.8						
Uninflated Hospital Surgical Volume (VOLUME-SPECIFIC)		Resection, Intestine			Cholecystectomy			Other Arthroplasty of Hip					
		Sample		Discharges	% Dying within		Sample		Discharges	% Dying Within			
		No.	Percent	60 Days of Surg.	No.	Percent	60 Days of Surg.	No.	Percent	60 Days of Surgery	No.	Percent	
Total		22,943	100	11.1%	35,167	100	4.3%	33,016	100	1.5%	18,118	43	1.5
Less than 6		11,175	49	12.1	13,501	38	4.1	10,369	31	1.6	10,369	31	1.6
6-10		7,054	31	10.4	12,015	34	4.3	4,542	14	1.2	4,542	14	1.2
11-15		2,888	13	10.1	5,708	16	4.4	1,775	5	1.4	1,775	5	1.4
16-20		1,047	5	9.9	2,518	7	3.9	2,192	7	1.0	2,192	7	1.0
More than 20		776	3	7.1	1,429	4	4.2						
Uninflated Hospital Surgical Volume (VOLUME-SPECIFIC)		Coronary Bypass			Total Hip Replacement			Other Arthroplasty of Hip					
		Sample		Discharges	% Dying within		Sample		Discharges	% Dying Within			
		No.	Percent	60 Days of Surg.	No.	Percent	60 Days of Surg.	No.	Percent	60 Days of Surgery	No.	Percent	
Total		6,184	100	6.5%	9,906	100	2.8	18,101	100	8.9%	7,383	41	9.6
Less than 6		1,410	23	7.2	2,682	27	2.6	5,167	29	8.8	5,167	29	8.8
6-10		1,642	27	6.9	2,991	29	2.5	2,672	15	8.6	2,672	15	8.6
11-15		1,175	18	6.0	1,914	19	2.7	1,378	8	7.6	1,378	8	7.6
16-20		600	10	5.8	1,156	17	1.6	1,591	8	7.7	1,591	8	7.7
More than 20		1,409	23	5.8	1,303	13	1.4						

\*Volume figures are uninflated from the 20 percent national sample.

hospitals (sample size greater than 20). Even so, 23 and 27 percent, respectively, of coronary bypass and total hip replacement operations were done in low-volume hospitals. Additional data on concentration of surgical procedures are available from Luft. On the other hand, concentration may have an adverse effect on beneficiaries, by limiting their choice of physicians and facilities, or by increasing travel distance for patients and their visitors.

#### **Data**

The data necessary to examine this effect are contained on the hospital bill record received by HCFA. However, due to the fact that, prior to the PPS, only a 20 percent sample of Medicare bills (the MEDPAR file) was maintained, any pre-PPS/post-PPS comparisons might be limited to the larger hospitals.

#### **Methods**

There are three major methodological issues to be addressed, dealing with the volume of data, designing measures of concentration which will detect significant concentration shifts, and measuring beneficiary impact where shifts are detected. Each of these issues is discussed below.

There are several thousand hospitals and several thousand DRG's, diagnoses, and procedures reported on patient bills, forming several million cells which are potentially affected by shifts in concentration. Due to the volume of data, either the number of cells has to be reduced or aggregate measures that are sensitive to concentration shifts must be devised. Our first approach to reducing the number of

cells will be to solicit expert opinion on which DRG's, diagnoses, or procedures have the greatest potential for concentration. We may further limit the cells by studying all hospitals within a few market areas.

There are several measures of concentration that might reveal significant shifts, using either the hospital or the condition (i.e., diagnosis, procedure, or DRG) as the unit of analysis. Some of these measures are as follows:

- The distribution of conditions within a hospital or for groups of hospitals before and after the implementation of the PPS may be tested for significant changes.
- Another measure of concentration is the proportion of conditions accounting for a given proportion of cases. For every hospital in each year, we can measure the degree of concentration of cases among the various conditions being monitored.
- A shift in concentration may be detectable by looking at the number of different conditions found for various percentages of hospitals. For example, it might be found that, before the PPS, 6 percent of the hospitals performed more than 500 different procedures, whereas after the PPS began, only 3 percent of hospitals performed at least 500 procedures. This would be a crude measure of concentration, in that it does not take into account the number of cases for each procedure.

All of these comparisons should be made with several years of baseline data, in order to reveal deviations from typical annual variations or trends.

If concentration shifts are detected, then measures of their impact on beneficiaries will be needed. There is statistical evidence, cited above, that mortality after surgery is lower in hospitals performing a higher volume of selected procedures. Although we can continue to monitor mortality, it would be desirable to develop outcome measures less severe than death.

### **Discussion**

This chapter has presented a discussion of efforts to monitor and evaluate the impact of the PPS on Medicare beneficiaries, along with a plan for the analysis of PPS data as they become available. In addition, some baseline (pre-PPS) data have been described, in order to provide a comparison for future analyses of PPS data.

As stated throughout this report, the attainment of cost efficiency under the PPS is meant to be accomplished without detracting from the health and welfare of the beneficiary population. For this reason, the effect of the PPS on beneficiary out-of-pocket costs and access to health care services, as well as the impact on the quality of care provided, will be monitored carefully, as the data and available research methods allow. This chapter, then, is meant as an initial discussion of the issues, data, and methods to be considered--and as a foundation for the analysis to follow in future reports.

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## Chapter 8

### IMPACT ON OTHER PROVIDERS OF HEALTH CARE

#### Overview

As hospitals respond to the system of incentives created by the PPS, their decisions regarding the treatment of Medicare patients may have an impact on other providers of health care, particularly physicians, nursing homes, and providers of home health care. The purpose of this chapter is to examine the issues relevant to these potential impacts.

#### Matrix Study Issues

The PPS Study Issue Matrix in Chapter 1 presents a listing of various measures that may be used to determine the impact of the Medicare Hospital Prospective Payment System on other providers of health care. This listing, which is reproduced in Table 8.1, describes both the anticipated benefits and unintended consequences of the PPS, as they might affect the economic considerations of other providers, as well as access to and quality of the care that they provide. The listing of study issues in Table 8.1 will thus provide a framework for the analysis of the impact of the PPS on other providers of health care over the next several years.

#### Limitations

For the present, the discussion of the issues listed in Table 8.1 is limited, because data reflecting the experience of many providers of health care during the

Table 8.1

**PPS IMPACT STUDY ISSUES:  
IMPACT ON NON-HOSPITAL PROVIDERS**

**Economic Impact**

- Anticipated Benefits--  
  
Increased provision of health care services in non-hospital settings.  
Increased number of discharges from inpatient to cheaper post-hospital care.  
Hospital acquisition of or contracting with other providers, leading to smoother provision of a continuum of patient care.
  
- Unintended Consequences--  
  
Pressure on physicians to change their practice patterns.  
Fewer in-hospital physician consultations.  
Increased frequency of minor surgical procedures.  
More severely ill patients discharged from inpatient to post-hospital care.  
Obstacles to providing a continuum of patient care, due to certificate of need restrictions, contracting prohibitions, etc.

**Impact on Quality of Care**

- Anticipated Benefits--  
  
More efficient management of patient care.  
Increased skill levels for post-hospital provider personnel.
  
- Unintended Consequences--  
  
Fewer in-hospital physician consultations.  
More severely ill patients discharged from inpatient to post-hospital care.

**Impact on Access to Care**

- Anticipated Benefits--  
  
Increased availability of services in non-hospital settings.
  
- Unintended Consequences--  
  
Longer backlogs of patients waiting for post-hospital care.

first year of the PPS are not currently available. As additional data become available, it will be possible to describe and analyze some of the impacts referred to in Table 8.1, at least as they relate to Medicare costs and the treatment of Medicare patients. However, the PPS may affect the health care provided to non-Medicare patients, as well, and data on these effects will be more difficult to obtain.

#### Chapter Organization

Due to the data limitations cited above, this chapter is restricted to a description of preliminary data from Medicare hospital bills and a few other sources. The discussion of these data is organized according to the following headings:

- Physicians;
- Discharges to skilled nursing facilities (SNF's);
- Discharges to intermediate care facilities (ICF's); and
- Discharges to home health agencies (HHA's).

In addition, a discussion of issues pertaining to the affect of Medicare policy on the coordination of patient care by different providers is contained in this chapter.

## Findings

### Physicians

Currently, the PPS does not apply to Medicare payment for physician services.<sup>1</sup> Rather, physician payment is based on Medicare customary and prevailing charge schedules, with increases in Medicare payment rates limited by the Medicare Economic Index.<sup>2</sup> Therefore, the incentives provided by prospective payment are not directly felt by physicians. However, as discussed in Chapter 2, the PPS is expected to exert a very strong influence over the way that physicians manage the care of their Medicare patients.

Some preliminary results from a pretest for the HCFA Physicians' Practice Costs and Incomes Survey indicate that some effect of PPS incentives may be being felt by physicians. Table 8.2 describes the response of the pretest survey sample, which included some 200 physicians in 5 states,<sup>3</sup> to a question on recent pressures by hospital management to change their patient management behavior. These results are consistent with the expectations discussed in Chapter 2, that prospective payment may cause hospitals to press physicians for a reduction in ancillary services, shorter hospital stays, and increased outpatient testing. An increased tendency to treat patients in non-hospital settings might also help to explain the surprising decrease in admissions reported in Chapter 6.

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<sup>1</sup> The Department is currently studying the issue of DRG-based payment for physicians' services provided to Medicare hospital patients. A report to the Congress on this issue is currently in preparation.

<sup>2</sup> Recently, physician payment under Medicare was further limited by a "freeze" on the Medicare prevailing fee schedule, to be effective from July 1984 until October 1985.

<sup>3</sup> The actual survey is currently underway, and its findings are due to be available in 1985.

Table 8.2

RESPONSE TO QUESTION FROM NORC PHYSICIAN SURVEY PILOT TEST  
SUMMER 1984

Question: Since this time last year, has the hospital administrator, chief of medicine or any other medical staff suggested that you...

<u>Suggestion</u>	<u>Yes</u>	<u>No</u>	<u>Percent Yes</u>
<u>All Physicians:</u>			
Increase admissions	21	137	13 percent
Decrease Medicare admissions	5	151	3 percent
Increase Medicare admissions	2	154	1 percent
Concentrate on admitting certain DRG's	3	155	2 percent
Reduce ancillaries	25	133	16 percent
Shorten length of stay	58	99	37 percent
<u>Radiologists, anesthesiologist, and pathologists only:</u>			
Reduce ancillaries	3	29	9 percent
Constrain expensive diagnostics	4	28	13 percent
Encourage outpatient testing	16	16	50 percent

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Source: National Opinion Research Center. Physicians' Practice Costs and Incomes Survey: Final Pretest Report. Report on Contract No. 500-83-0025, September 1984.

## Discharges to Skilled Nursing Facilities

SNF's are facilities which provide post-hospital skilled nursing services to acutely ill or long-term care patients. Currently, SNF's are reimbursed for routine costs per Medicare patient day, subject to an upper reimbursement limit, with hospital-based SNF's having higher limits than do free-standing SNF's.

With hospitals seeking to reduce lengths of stay for Medicare patients under the PPS (see Chapter 2), an increase is anticipated in the rate of transfer of Medicare cases to long-term care providers. The data presented in Table 8.3 show a slight acceleration in the projected rate of increase in SNF admission notices processed by HCFA during FY 1984. While the rate of increase for the previous two fiscal years was 4.7 percent, the projected rate of increase for FY 1984 was 5.7 percent.

As mentioned in previous chapters, the impact of the PPS may be only partially revealed by the comparison of FY 1984 to previous years, since only a small percentage of hospitals were directly affected by the PPS for the entire year. The gradual implementation of the new system makes it possible, however, to compare data from hospital bills paid under the PPS with data from bills submitted by similar hospitals that had not yet become subject to prospective payment.

Table 8.4 presents data on the percentage of discharges to SNF's for PPS and non-PPS bills, from the PPS Impact Data Base described in Chapter 6.<sup>4</sup> According

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<sup>4</sup> This data base includes hospital bills for discharges between October 1983 and June 1984 that were processed by HCFA as of July 1984.

Table 8.3

SNF ADMISSION NOTICES PROCESSED BY HCFA  
FY 1981-84

<u>Fiscal Year</u>	<u>SNF Admission Notices Processed</u>	<u>Percent Change</u>
1981	509,653	---
1982	533,607	+4.7
1983	558,604	+4.7
1984	590,322 <sup>a</sup>	+5.7

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<sup>a</sup>Notices processed through June 1984, projected through end of fiscal year, based on previous seasonal patterns.

Source: HCFA, Bureau of Data Management and Strategy.

Table 8.4

**DISCHARGES TO SKILLED NURSING FACILITIES (SNF's)**  
**PPS AND NON-PPS BILLS**  
**FROM PPS IMPACT DATA BASE**

<u>Group</u>	<u>Percent Discharges to SNF's</u>		
	<u>PPS Bills</u>	<u>Non-PPS Bills</u>	<u>Difference</u>
<u>All Groups</u>	4.6	1.6	+3.0
<u>By Census Division</u>			
New England	4.2	0.8	+3.4
Middle Atlantic	5.0	1.0	+4.0
South Atlantic	3.7	1.8	+1.9
East North Central	6.2	3.7	+2.5
East South Central	3.2	1.2	+2.0
West North Central	5.7	1.2	+4.5
West South Central	2.7	0.7	+2.0
Mountain	3.7	0.8	+2.9
Pacific	6.6	2.4	+4.2
<u>By Urbanicity</u>			
Urban	4.6	1.6	+3.0
Rural	4.6	1.9	+2.7
<u>By Teaching Status</u>			
Non-Teaching	4.8	1.8	+3.0
Teaching-Low	4.4	1.6	+2.8
Teaching-High	2.6	0.6	+2.0
<u>By Ownership</u>			
Not-for-Profit	5.3	1.7	+3.6
Proprietary	4.0	1.2	+2.8
Government	4.4	1.8	+2.6

Source: HCFA, Bureau of Data Management and Strategy.

to these data, there appears to be a large difference between the rate of discharges to SNF's among PPS bills and that among non-PPS bills. While only 1.6 percent of non-PPS bills indicate discharges to SNF's, the rate among PPS bills -- 4.6 percent -- is almost three times as high.

By census division, the PPS rate of discharges to SNF's ranges from 2.7 percent in the West South Central region to 6.6 percent in the Pacific region, with the largest differences between PPS and non-PPS bills in the West North Central, Pacific, and Middle Atlantic regions. Urbanicity seems to have little effect on the rate of discharges to SNF's.

Teaching hospitals with high concentrations of interns and residents per bed<sup>5</sup> appear to have considerably lower rates of discharges to SNF's than do other teaching hospitals and non-teaching hospitals. This relationship appears to hold for both PPS and non-PPS bills. By ownership category, the not-for-profit group has the highest of discharges to SNF's, and also the largest difference between PPS and non-PPS rates.

#### Discharges to Intermediate Care Facilities

ICF's are facilities which provide more than custodial services, but less than skilled nursing services, to long-term care patients. Currently, these services are not reimbursable by Medicare, but they frequently are covered by Medicaid.

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<sup>5</sup> "Teaching-High" hospitals are defined as those hospitals with at least 0.25 interns and residents per bed.

Although ICF's are not covered under Medicare, they are likely to be affected by the anticipated tendency toward shorter hospital stays under the PPS. As shown in Table 8.5, discharges to ICF's are more frequently indicated on PPS bills than on non-PPS bills. While the non-PPS ICF discharge rate is 0.7 percent, the rate among PPS bills is 2.5 percent--about three and one-half times as high.

By census division, the discharge rate to ICF's among PPS bills ranges from 0.6 percent in the Middle Atlantic region to 5.4 percent in the West North Central region, with the largest differences between PPS and non-PPS bills occurring in the West North Central, West South Central, and New England regions. While urbanicity does not appear to affect the rate of discharges to SNF's, it does seem to affect the ICF discharge rate, which is considerably higher in rural areas.

Teaching status also appears to be very strongly correlated with the discharge rate to ICF's. Non-teaching hospitals have an ICF discharge rate of 2.8 percent for PPS bills, while low-intensity teaching hospitals have a rate of 1.7 percent and high-intensity teaching hospitals a rate of 0.6 percent. The pattern of discharges to ICF's among non-PPS bills seems to be similar to that among PPS bills. While not-for-profit hospitals appear to have a slightly lower rate of discharges to ICF's than do other hospitals, the difference between PPS and non-PPS bills appears similar across ownership categories.

#### Discharges to Home Health Agencies

Home health care provided to Medicare patients is reimbursed subject to upper limits on nursing cost per visit, with hospital-based HHA's having higher

Table 8.5

**DISCHARGES TO INTERMEDIATE CARE FACILITIES (ICFs)  
PPS AND NON-PPS BILLS  
FROM PPS IMPACT DATA BASE**

<u>Group</u>	Percent Discharges to ICF's		
	<u>PPS Bills</u>	<u>Non-PPS Bills</u>	<u>Difference</u>
<u>All Groups</u>	2.5	0.7	+1.8
<u>By Census Division</u>			
New England	3.4	0.6	+2.8
Middle Atlantic	0.6	0.1	+0.5
South Atlantic	1.2	0.5	+0.7
East North Central	1.9	1.1	+0.8
East South Central	1.8	1.1	+0.7
West North Central	5.4	1.1	+4.3
West South Central	5.1	1.4	+3.7
Mountain	1.2	0.3	+0.9
Pacific	1.4	0.3	+1.1
<u>By Urbanicity</u>			
Urban	1.9	0.4	+1.5
Rural	3.7	1.5	+2.2
<u>By Teaching Status</u>			
Non-Teaching	2.8	0.9	+1.9
Teaching-Low	1.7	0.4	+1.3
Teaching-High	0.6	0.2	+0.4
<u>By Ownership</u>			
Not-for-Profit	2.1	0.6	+1.5
Proprietary	2.6	0.5	+2.1
Government	2.6	0.9	+1.7

Source: HCFA, Bureau of Data Management and Strategy.

limits than free-standing HHA's. As with other types of post-hospital care, HHA's are expected to face increased numbers of patients discharged from hospitals under the PPS.

Table 8.6 presents the rates of discharges to HHA's among PPS bills and non-PPS bills in the PPS Impact Data Base. As these data show, the rate of discharges to HHA's among PPS bills (2.9 percent) is about three and one-half times greater than that among non-PPS bills (0.8 percent).

By census division, the rate of discharges to HHA's varies from 1.3 percent in the West South Central region and 1.5 percent in the Mountain region to 7.7 percent in New England and 8.4 percent in the Middle Atlantic. The difference between PPS and non-PPS rates is greater by far in the latter two regions than in any other region. Unlike SNF and ICF discharge rates, the HHA discharge rate is higher for urban than for rural hospitals. Among both PPS and non-PPS bills, the rate for urban hospitals is about 50 percent higher than the rate for rural hospitals.

Also unlike SNF and ICF discharge rates, the HHA discharge rate among PPS bills does not seem to be affected by teaching status--although high-intensity teaching hospitals have a lower rate among non-PPS bills. By ownership category, proprietary hospitals seem to have a somewhat higher rate of discharges to HHA's than do other hospitals.

Table 8.6

**DISCHARGES TO HOME HEALTH CARE  
PPS AND NON-PPS BILLS  
FROM PPS IMPACT DATA BASE**

<u>Group</u>	Percent Discharges to Home Health Care		
	<u>PPS Bills</u>	<u>Non-PPS Bills</u>	<u>Difference</u>
<u>All Groups</u>	2.9	0.8	+2.1
<u>By Census Division</u>			
New England	7.7	1.0	+6.7
Middle Atlantic	8.4	0.5	+7.9
South Atlantic	2.9	1.0	+1.9
East North Central	2.7	1.5	+1.2
East South Central	1.7	0.8	+0.9
West North Central	3.1	0.5	+2.6
West South Central	1.3	0.2	+1.1
Mountain	1.5	0.5	+1.0
Pacific	3.6	1.2	+2.4
<u>By Urbanicity</u>			
Urban	3.2	0.9	+2.3
Rural	2.2	0.6	+1.6
<u>By Teaching Status</u>			
Non-Teaching	2.8	0.8	+2.0
Teaching-Low	3.2	1.0	+2.2
Teaching-High	3.1	0.3	+2.8
<u>By Ownership</u>			
Not-for-Profit	3.1	0.9	+2.2
Proprietary	3.8	0.7	+3.1
Government	2.4	0.7	+1.7

Source: HCFA, Bureau of Data Management and Strategy.

## Coordination of Patient Care

As shown by the data presented above, there appears to be a tendency under the PPS to increase the care provided to patients in other than inpatient acute care settings. To the extent that this tendency reflects an improvement in the coordination of health care provision among providers in ambulatory, inpatient, and long-term care settings, the PPS may be seen as encouraging overall efficiency in the health care sector. The effect of these changes will continue to be monitored as the PPS continues to develop over time.

One aspect of this issue is reflected in the treatment of reserve bed agreements between hospitals and long-term care facilities. These agreements provide that, in exchange for consideration received from the hospital, the long-term care facility will reserve a certain number of beds for use by the hospital's discharged patients. Although the SNF Medicare provider agreement prohibits the use of patient-specific agreements of this type (i.e., agreements relating to the reservation of beds for any specific patient or group of patients), an agreement which is not patient-specific--i.e., which holds regardless of whether the reserved beds are actually used--is permissible.

By ensuring that SNF beds are available for their discharged patients, reserve bed agreements enable hospitals to develop more efficient patient management approaches. However, under Medicare's previous cost-based reimbursement system, hospitals were discouraged from such agreements, because, while they were reimbursed for the extra cost of providing extended inpatient care when no SNF bed was available, they were not reimbursed for the cost of reserving beds

(since these costs are not considered part of the cost of inpatient services). Under the PPS, hospitals receive a fixed payment for each case, and cannot increase their payment by providing extended inpatient acute care<sup>6</sup>--therefore, hospitals need not forego potential additions to their revenues by discharging patients to long-term care.

#### Discussion

As mentioned above, data availability imposes a severe limitation on the issues which can be addressed relevant to the impact of hospital prospective payment on other providers. The data that are currently available yield only a sketchy description of what changes, if any, are being caused by the PPS among non-hospital providers of health care. Moreover, questions about the accuracy of the discharge status data<sup>7</sup> cast doubt upon even these few findings. Nonetheless, indications are that the impact of the PPS is being felt by non-hospital providers of health care.

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<sup>6</sup> Cases that qualify as outliers are eligible for payment in addition to the basic DRG payment rate (see Chapter 2). However, these additional payments are equal to only 60 percent of the relevant per diem payment for days above the outlier threshold, or 60 percent of the difference between the charges for the case, adjusted to cost, and the relevant cost outlier threshold.

<sup>7</sup> Due to errors in coding, 8.6 percent of non-PPS cases in FY 1984 had unknown discharge status. Since there is no reason to assume that these errors were randomly distributed, the true distribution by discharge status for non-PPS cases may be somewhat different than that reported in this chapter.

For physicians, office-based testing and other contact with patients (especially Medicare patients) outside of the hospital is expected to increase, as hospitals encourage shorter inpatient stays. Long-term care providers, in addition to facing increasing numbers of discharges from hospitals, may face increased levels of medical severity among the patients whom they treat. In addition, hospitals may attempt to establish formal relationships with (or attempt to acquire) long-term care providers, in order to facilitate the disposition of patients who cannot be safely discharged to their own homes.

The PPS may have other effects on health care providers. Independent laboratories may benefit from the increased tendency toward pre-admission and outpatient testing, as hospitals attempt to "unbundle" services which previously were considered part of the routine inpatient services package. Long-term care providers who are not covered by Medicare may also be affected: if the PPS causes an increase in the rate of discharge to skilled nursing and home health care, and a decrease in health status among these patients, the demand for other post-hospital care may be expected to increase as well.

The detection and analysis of these effects will be further pursued in future issues of this annual report.

## Chapter 9

### IMPACT ON OTHER PAYERS FOR INPATIENT HOSPITAL SERVICES

#### Overview

The Medicare program accounts for some 27 percent of all expenditures on hospital care in the United States,<sup>1</sup> clearly establishing Medicare as the largest single customer for hospital services. Given the dominant role played by Medicare, and the dramatic change in the way that Medicare pays for hospital services under the PPS, it would not be unreasonable to expect that the entire hospital payment environment might be altered by the new system. Among those most likely to be directly affected by such a change are those who pay the bulk of the remaining portion of the nation's hospital bill--primarily, State Medicaid programs, Blue Cross and Blue Shield plans, and commercial insurers. The purpose of this chapter is to describe and analyze the impact of Medicare prospective payment on these other payers for inpatient hospital services.

#### Matrix Study Issues

The issues to be addressed in this chapter are described in Table 9.1. This table is derived from the PPS Study Issue Matrix, presented in Chapter 1, which lists various measures that may be used to determine the impact of prospective payment on each of the major groups expected to be affected by the new system.

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<sup>1</sup> Robert M. Gibson, et. al. "National Health Expenditures, 1982." Health Care Financing Review, Vol. 5, No. 1, Fall 1983, p. 12.

Table 9.1

**PPS IMPACT STUDY ISSUES:  
IMPACT ON OTHER PAYERS FOR INPATIENT HOSPITAL CARE**

Economic Impact

- Anticipated Benefits--  
Rapid diffusion of prospective payment and other innovative payment systems. Cost savings for all payers, with resulting reduction in health insurance premiums.
- Unintended Consequences--  
Potential shifting of cost burden to other payers for hospital services, with resulting increase in health insurance premiums or reduction in benefits. Increase in uncompensated care.

Impact on Quality of Care

- Anticipated Benefits--  
Better coordination of health care treatment, payment, and coverage.
- Unintended Consequences--  
Competing incentives to health care providers, depending on the type of coverage.

Impact on Access to Care

- Anticipated Benefits--  
Reduced health care charges and insurance premiums.  
Better coordination of health care treatment, payment, and coverage.  
Increased sponsorship of HMO's and PPO's.
- Unintended Consequences--  
Decrease in coverage for poor patients, due to uncompensated care issue.

In Table 9.1, the potential impacts on other payers are represented in terms of both anticipated benefits and unintended consequences of the PPS, as they relate to economic considerations and also access to and quality of health care. Although many of these effects cannot yet be empirically analyzed, the listing in Table 9.1 provides a framework for the analysis of the impact of the PPS on other payers over the next several years.

#### Limitations

As mentioned above, data are not currently available with which to empirically analyze the financial impact of the PPS on other payers for inpatient hospital services. Consequently, this chapter is restricted to a description of activities undertaken by the other major (groups of) payers as Medicare prospective payment for hospitals was implemented. As additional data become available, the analysis of the issues listed in Table 9.1 will be broadened in scope. However, it must be noted that, particularly in the case of the commercial insurers, much of the data required for this analysis may be very difficult to obtain in the future, as well.

#### Chapter Organization

This chapter is divided into three major headings, corresponding to the categories into which the other major payers for inpatient hospital services are grouped:

- Medicaid;
- Blue Cross and Blue Shield; and
- Commercial insurers.

Under each heading, an attempt is made to analyze early signs of reaction to the new Medicare prospective payment system.

#### Medicaid

In 1970, the Medicaid program accounted for \$1.8 billion in combined Federal, State, and local expenditures for inpatient hospital services. By 1980, Medicaid was paying \$7.1 billion for inpatient hospital services.<sup>2</sup> This indicates a 14.7 percent annual rate of growth during the 1970's.

By 1981, State Medicaid programs were, like many other public (especially health) programs, faced with rapidly rising costs that threatened to outstrip the

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<sup>2</sup> U.S. Department of Commerce. Statistical Abstract of the United States, 1982-83. Washington, D.C., 1982, p. 334.

availability of funds. A report by the Intergovernmental Health Policy Project concluded that:

"...1981 was an extraordinary year in the history of the Medicare program. Never before had the cost problem affected so many state Medicaid programs at the same time; and never before had the state responses been quite so pervasive and troubling for recipients and providers alike."<sup>3</sup>

That year also was marked by the enactment of P.L. 97-35, the Omnibus Budget Reconciliation Act of 1981 (OBRA).

#### The Omnibus Budget Reconciliation Act of 1981

With the enactment of OBRA, States' leverage over the management and operation of their Medicaid programs was significantly expanded. Section 2173 of the law relieved the States of the requirement that Medicaid programs follow Medicare's retrospective reasonable cost-based reimbursement principles, retaining the basic stipulation that Medicaid payments be reasonable, adequate, and sufficient to ensure the access of beneficiaries to adequate care.

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<sup>3</sup> Intergovernmental Health Policy Project. Recent and Proposed Changes in State Medicaid Programs: A Fifty State Survey. Washington, D.C., December 1983, p. iii.

The Intergovernmental Health Policy Project thus reported that:

"...1982 marked the beginning of a gradual shift in the focus of (Medicaid) cost-containment activities away from the traditional short-term strategies, e.g., limitations on eligibility and services, reductions in provider payments, etc., to a concentration on more long-range, structural reforms in the organization, financing, and delivery of Medicaid services."<sup>4</sup>

Following the enactment of OBRA, several States replaced their traditional retrospective, reasonable cost-based reimbursement systems for inpatient hospital services with prospective payment systems, and a number of other States initiated other alternatives to the traditional Medicare system.<sup>5</sup>

The passage of P.L. 97-248, the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA), provided further impetus for the adoption of alternatives to retrospective cost-based reimbursement. Several States with reimbursement systems linked by statute or regulation to the Medicare system moved from pure cost-based methods to methods which imposed TEFRA-like limits and ceilings on reimbursement.

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<sup>4</sup> Ibid., p. iii.

<sup>5</sup> Actually, several statewide demonstrations of alternatives to the retrospective reasonable cost-based payment systems had been authorized during the years prior to OBRA, under the authority of the Social Security Amendments of 1972. In fact, experience with these State programs provided important input toward the development of the PPS.

Figure 9.1 is a map which depicts States which had developed alternatives to the reasonable cost-based system as of September 30, 1983—the day before the implementation of the PPS began. As shown in this figure, quite a bit of State activity had already taken place prior to the enactment of Medicare prospective payment.

With the implementation of Medicare prospective payment, State activity in modifying Medicaid hospital payment methodologies has accelerated. A study of the 54 State and territorial Medicaid programs found that, as of October 1984—1 year after the Medicare PPS was enacted—33 States and one territory had some form of prospective payment methodology in effect for hospital inpatient services.<sup>6</sup> However, as shown in Table 9.2, only four of these systems—those in New Jersey, Ohio, Pennsylvania, and Utah—had followed Medicare in adopting the DRG as the basis of payment.<sup>7</sup>

Although Washington had also adopted a DRG-based prospective payment system by the end of 1984, with Michigan and South Dakota set to implement DRG-based systems in early 1985, and several other States—including Connecticut, Indiana, Minnesota, North Carolina, Oregon, and Wyoming—actively considering such a move, it can hardly be concluded that the responses of the individual Medicaid programs have been limited to imitations of Medicare. Of the 33 States

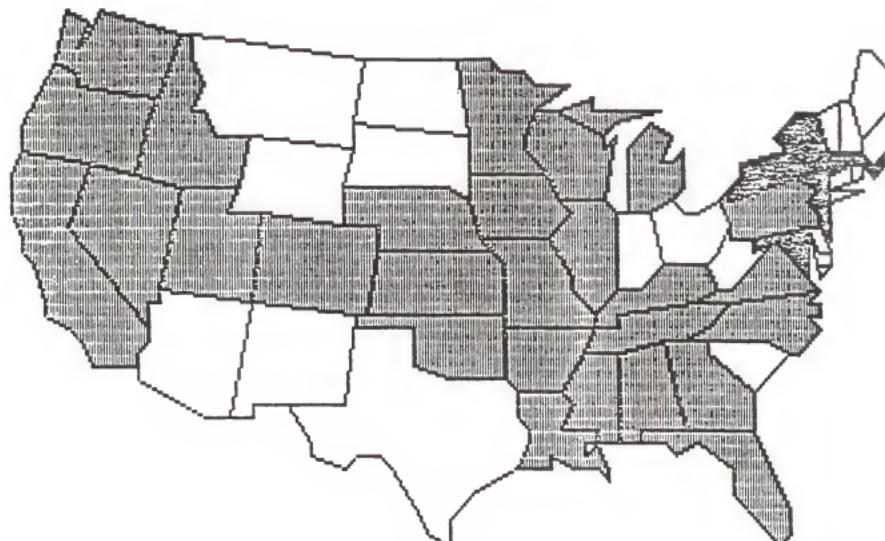
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<sup>6</sup> James Bell and Associates. Exploring the Effects of Medicare PPS on Medicaid. Draft Report for Contract No. HCFA 500-83-0058. December 1982.

<sup>7</sup> Actually, as pointed out above, the New Jersey system preceded the Medicare PPS. In addition, Georgia attempted a DRG-based system during the early 1980's, but abandoned it after 2 years.

FIGURE 9.1

STATES WITH ALTERNATIVES  
TO RETROSPECTIVE COST-BASED HOSPITAL REIMBURSEMENT  
AS OF SEPTEMBER 30, 1983



WAIVER STATES



ALTERNATIVES TO RETROSPECTIVE COST-BASED REIMBURSEMENT



RETROSPECTIVE COST-BASED REIMBURSEMENT

Table 9.2

**PROSPECTIVE PAYMENT-TYPE METHODOLOGIES  
IN STATE AND TERRITORIAL MEDICAID PROGRAMS  
AS OF OCTOBER 1984**

<u>Group</u>	<u>States/Territories</u>	
DRG-Based (4)	New Jersey	
	Ohio	
	Pennsylvania	
	Utah	
Per Diem (17)	Alabama	Missouri
	California	Nebraska
	Colorado	New York
	Illinois	North Carolina
	Iowa	Oklahoma
	Kansas	Tennessee
	Kentucky	Virginia
	Maryland	Guam
	Mississippi	
Budget Review (7)	Alaska	Michigan
	Florida	Rhode Island
	Maine	Washington
	Massachusetts	
Other Types (6)	Arizona	Montana
	Georgia	Nevada
	Idaho	Oregon

Source: James Bell and Associates. Exploring the Effects of Medicare PPS on Medicaid. Draft Report for Contract No. HCFA 500-83-0058. December 1984.

with prospective payment systems in October 1984, at least 16 involved per diem payment, rather than the Medicare system's per case payment. Still, there appears to be a definite trend away from the old retrospective cost-based reimbursement system--of the nine States retaining that system as of December 1984, five were planning or considering changes in their payment methodologies.<sup>8</sup>

Thus, in response to the rapid increase in Medicaid hospital costs, and spurred by the implementation of Medicare prospective payment, State Medicaid programs have been found to have implemented a diverse range of reimbursement methods. The methods, incentives, and control mechanisms used by these programs reflect the differing policy objectives, programmatic concerns and political environments in each State. However, several important trends may be observed:<sup>9</sup>

- State programs are moving from retrospective to prospective payment methods.
- Payment methods increasingly depend upon externally derived standards, such as trend factors, peer groupings, and diagnostic categories, to establish hospital payment rates.

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<sup>8</sup> Abt Associates. State Medicaid Inpatient Hospital Reimbursement: Summary of State Programs. Report on Contract No. 500-83-0057, December 1984.

<sup>9</sup> *Ibid.*

- Programs more recently implemented tend toward a more stringent selection of base unit and payment incentives.
- State programs are becoming more sophisticated, with the inclusion of adjustments and incentives for case-mix, volume, and other special needs.
- Control of capital and capacity increases is viewed as especially critical to overall program cost effectiveness.

The individual features of each State program can be expected to affect incentives for controlling costs, and for providing adequate access to and quality of health care. In addition, the health care environment in each State can play an important role in determining the success or failure of specific program features. As the Medicare PPS continues to develop, its effect on both the structure of and the environment surrounding the State Medicaid programs will continue to be monitored.

#### Blue Cross and Blue Shield

Blue Cross was begun in 1929 as a prepayment plan for hospital care for some 1,000 employees of Baylor University. Ten years later, the first Blue Shield plan, designed as a complementary prepayment plan for physicians' services, was

organized. From these modest beginnings, Blue Cross and Blue Shield has grown into 75 autonomous plans in the United States, Puerto Rico, Canada, and Jamaica. By 1982, nearly 86 million persons had hospital insurance protection under Blue Cross and Blue Shield plans.<sup>10</sup>

Collectively, these plans comprise a large share of the hospital services market. However, since each plan is an independent organization, no standard subscriber contract or universal payment methodology can be attributed to Blue Cross and Blue Shield. In addition, although there is a national organization--the Blue Cross and Blue Shield Association--that functions as a spokesman for the collective group and as a clearinghouse for research of interest to the plans as a whole, the adoption of a system of payment remains the prerogative of each individual plan.

#### Payment Methodologies

As mentioned above, Blue Cross plans have no uniform benefit structure, nor is there uniformity among the individual plans in payment methods, cost and service monitoring, or contract negotiations. Historically (prior to the enactment of Medicare prospective payment), however, the majority of Blue Cross plans have used cost-based reimbursement methods, with the remainder using charge-based systems.

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<sup>10</sup> Health Insurance Association of America. 1984 Update: Service Book of Health Insurance Data, 1982-83. New York, 1983.

With the implementation of the PPS, some Blue Cross plans have adopted prospective pricing systems that use DRG's, but the American Hospital Association (AHA) reports that "there is no 'big push' by the plans toward the use of this particular mechanism."<sup>11</sup> Some plans have adopted prospective pricing, but without DRG's, while others utilize DRG's, but not within a prospective pricing system. Instead, the AHA reports, there is a recent trend toward the development of health maintenance organizations (HMO's) and preferred provider organizations (PPO's) by Blue Cross and Blue Shield plans.<sup>12</sup>

Plans in Kansas, Nebraska, and Oklahoma presently use some form of DRG-based payment, while the Florida and Michigan plans have pilot programs using DRG's. In addition, New Jersey, as mentioned above, has an all-payer DRG-based system.

Several other plans use some form of prospective pricing, including Arizona, Connecticut, Michigan, Minnesota, Rhode Island, and Des Moines, Iowa. Again, as mentioned above, the use of prospective pricing in Massachusetts and New York is mandated by State law.

As was the case before the advent of DRG's and prospective payment, the individual plans utilize a variety of pricing methods. For instance, the Arizona plan uses a system of fixed, all-inclusive prospective prices, while the Kansas plan

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11 Hospitals, September 16, 1984.

12 Ibid.

uses a DRG-based methodology for discharge classification, but continues to pay charges up to a maximum limit for each DRG. In Nebraska, inpatient hospital services are paid for under a methodology that closely resembles the Medicare system.

#### Other Cost Containment Activities

In addition to investigating new methodologies for hospital payment, Blue Cross plans have pursued other approaches to cutting the cost of hospital services. Iowa Blue Cross recently provided a \$24 million general premium reduction to subscribers, which they attributed to a three-year effort to reduce unnecessary utilization.<sup>13</sup> Other utilization containment programs were in operation in Northeast and Northwest Ohio, Kansas City, Iowa, Connecticut, and Pennsylvania.

Blue Shield of California is offering a preferred provider plan that is reported to cost 15 to 18 percent less than its standard benefit plan, with the concomitant savings passed on to subscribers, in the form of lower premiums. Effective July 1, 1984, Blue Cross and Blue Shield of Alabama implemented a preferred provider organization (PPO)--the first in the State--which contracts with physicians in the greater Birmingham area. Other PPO's were instituted in Colorado and Arizona. By the end of 1984, Blue Cross and Blue Shield plans were administering 20 PPO's, and the number was expected to grow to 44 by the end of 1985.<sup>14</sup>

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<sup>13</sup> Washington Health Cost Letter, Vol. 10, No. 6, March 16, 1984.

<sup>14</sup> Blue Cross and Blue Shield Association. Cost Containment News, Winter 1985.

In addition, membership in HMO's sponsored by Blue Cross and Blue Shield plans increased by 26 percent in 1983--exceeding the nationwide increase of 15 percent reported in HMO membership overall. At the end of 1983, a total of 40 Blue Cross and Blue Shield plans were operating 57 HMO's with over 1.5 million members. By the end of 1984, the number of these HMO's had increased to 62, with a membership of 2 million.

#### Commercial Insurers

As mentioned earlier in this chapter, no data are currently available on the effect that prospective payment has had on commercial insurers. The diversity of individual carriers comprising this group makes it extremely difficult to generalize about policy or financial impacts. As of yet, there is no evidence of any substantial impact on these payers by the Medicare prospective payment system.

#### Discussion

Of the groups of payers on which this chapter has focused, it appears that the States have most aggressively adopted prospective payment mechanisms. Blue Cross and Blue Shield plans, on the other hand, appear to be more reluctant to adopt prospective payment, and have shown some preference for other cost-containment mechanisms, such as HMO's and PPO's. There is no evidence thus far of any impact on commercial insurers, other than in States with all-payer system, in which participation is mandatory.

Over the next several years, further attempts will be made to study the issues listed in Table 9.1. In particular, available data will be monitored for any indication of the shifting of cost burdens from Medicare to other payers. The rate at which the PPS leads to the development of other prospective payment or other DRG-based systems will also be monitored as part of the analysis of the impact on other payers.

## Chapter 10

### IMPACT ON MEDICARE PROGRAM EXPENDITURES

#### Overview

The Congress' principal motivation in enacting prospective payment for Medicare inpatient hospital services was to constrain the depletion of the Medicare Trust Funds. This was to be accomplished not merely by reducing Medicare payment allowances, but also--and mainly--by changing hospital incentives in a way that offers rewards for efficiency. Thus, a primary objective of the PPS is to change the economic incentives provided by Medicare hospital payment, in order to encourage the efficient provision of hospital care. This efficient behavior, it is hoped, will lead to reduced rates of increase in Medicare hospital costs; consequently, if these reduced rates are not counteracted by increases in other program costs, they should help to maintain the solvency of the Medicare program.

#### Matrix Study Issues

The PPS Study Issue Matrix described in Chapter I presents a framework for examining various issues regarding the impact of Medicare prospective payment on overall Medicare program expenditures. These matrix issues are reproduced in Table 10.1, and represent economic considerations, as well as considerations of access to and the quality of health care, as they relate to both the anticipated benefits and unintended consequences of the PPS. The factors listed in Table 10.1 thus provide a conceptual model for the analysis to be conducted over the next several years.

Table 10.1

**PPS STUDY ISSUES:  
IMPACT ON MEDICARE PROGRAM EXPENDITURES**

	<u>Hospital Expenditures</u>	<u>Total Program Expenditures</u>
<b><u>Economic Impact</u></b>		
● Anticipated Benefits--	Budget neutrality in the short run. Slower rate of growth in expenditures for the longer run. More predictable outlays.	Slower rate of growth in program expenditures.
● Unintended Consequences--	Increased growth in "pass-through" costs.	Increased growth in expenditures for substitutes for inpatient care, to the extent that they are not offset by a decline in inpatient hospital expenditures. Increased growth in expenditures for post-hospital care, to the extent that they are not offset by a decline in acute care expenditures.
<b><u>Impact on Quality of Care</u></b>		
● Anticipated Benefits--	More efficient provision of hospital care.	More efficient provision of overall health care.
● Unintended Consequences--	Replacement of quality with financial considerations as the objective of hospitals.	Replacement of quality with financial considerations as the objective of health care providers.
<b><u>Impact on Access to Care</u></b>		
● Anticipated Benefits--	Reduction in the cost of hospital care. Promotion of the success of efficient hospitals.	Reduction in the total cost of health care. Encouragement of efficiency in the management of health care providers.
● Unintended Consequences--	Widespread hospital closings, particularly in underserved or poorer areas.	Reduction in acceptance of Medicare patients.

## Chapter Organization

This chapter is primarily based on estimates made by HCFA's Office of Financial and Actuarial Analysis, concerning FY 1984 Medicare benefit outlays and administrative disbursements. The impact of the PPS on Medicare program expenditures is discussed under the following headings:

- Payments for inpatient hospital services;
- Payments for outpatient hospital services;
- Payments for physician services;
- Payments for skilled nursing services;
- Payments for home health services;
- Total benefit payments and their distribution; and
- HCFA Administrative costs.

Under each heading, trends over time are discussed, including data on annual percentage changes in recent years.

## Findings

### Payments for Inpatient Hospital Services

Table 10.2 illustrates the growth of Medicare inpatient hospital payments over the history of the Medicare program. As is shown in this table, these payments have risen from about \$2.4 billion in FY 1967 to over \$39 billion (estimated) in FY 1984. In real terms,<sup>1</sup> the estimated growth in Medicare inpatient hospital payments was over 425 percent between FY 1967 and FY 1984, as shown in Table 10.3.

Table 10.4 shows the apparent effect of recent efforts to control the increase in Medicare hospital expenditures. From FY 1974--after temporary wage and price controls were removed--through FY 1982--the last year prior to the imposition of TEFRA restrictions--Medicare inpatient hospital expenditures increased at an annual rate of 19.9 percent (10 percent above the general rate of inflation)--never falling below 14.3 percent in any given year. Under TEFRA (during FY 1983), this rate of increase was only 10.2 percent (6.8 percent in real terms)--lower than at any time in the previous ten years. Furthermore, the estimated rate of increase under the PPS (during FY 1984) was lower still, at 8.2 percent (3.8 percent in real terms)--among the smallest percentage increases in the program's history.

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<sup>1</sup> "Real" growth is calculated after all expenditure figures have been adjusted for the overall rate of inflation, as measured by the Consumer Price Index compiled by the Bureau of Labor Statistics, U.S. Department of Labor.

Table 10.2

ESTIMATED MEDICARE BENEFITS PAYMENTS BY TYPE OF PROVIDER  
FY 1967-84  
(in \$ millions)

Fiscal Year	Inpatient Hospital		Outpatient Hospital <sup>a</sup>		Physician <sup>b</sup>		Skilled Nursing		Home Health <sup>c</sup>	
	Amt.	Pct. Change	Amt.	Pct. Change	Amt.	Pct. Change	Amt.	Pct. Change	Amt.	Pct. Change
1967	2,393	---	15	---	629	---	97	---	21	---
1968	3,348	+ 39.9	40	+166.7	1,304	+107.3	344	+254.6	60	+185.7
1969	4,239	+ 26.6	67	+ 67.5	1,516	+ 16.3	367	+ 6.7	77	+ 28.3
1970	4,452	+ 5.0	93	+ 38.8	1,814	+ 19.7	298	- 18.8	89	+ 15.6
1971	5,182	+ 16.4	137	+ 47.3	1,831	+ 0.9	214	- 28.2	76	- 14.6
1972	5,887	+ 13.6	174	+ 27.0	1,996	+ 9.0	174	- 18.7	84	+ 10.5
1973	6,412	+ 8.9	175	+ 0.6	2,118	+ 6.1	179	+ 2.9	100	+ 19.0
1974	7,513	+ 17.2	319	+ 82.3	2,426	+ 14.5	214	+ 19.6	138	+ 38.0
1975	9,947	+ 32.4	509	+ 59.6	3,065	+ 26.3	273	+ 27.6	228	+ 65.2
1976	11,742	+ 18.0	717	+ 40.9	3,690	+ 20.4	308	+ 12.8	339	+ 48.7
1977	14,265	+ 21.5	953	+ 32.9	4,599	+ 24.6	351	+ 14.0	441	+ 30.1
1978	16,684	+ 17.0	1,184	+ 24.2	5,327	+ 15.8	354	+ 0.9	543	+ 23.1
1979	19,067	+ 14.3	1,445	+ 22.0	6,397	+ 20.1	364	+ 2.8	647	+ 19.2
1980	22,842	+ 19.8	1,809	+ 25.2	7,814	+ 22.2	387	+ 6.3	772	+ 19.3
1981	27,744	+ 21.5	2,215	+ 22.4	9,513	+ 21.7	424	+ 9.6	959	+ 24.2
1982	32,729	+ 18.0	2,916	+ 31.6	11,392	+ 19.8	454	+ 7.1	1,176	+ 22.6
1983	36,083	+ 10.2	3,342	+ 14.6	13,498	+ 18.5	500	+ 10.1	1,545	+ 31.4
1984	39,050	+ 8.2	3,739	+ 11.9	14,936	+ 10.7	545	+ 9.0	1,898	+ 22.8

<sup>a</sup> Includes payments for routine maintenance dialysis treatments since FY 1974.

<sup>b</sup> Includes payments for durable medical equipment, ambulance, and several other non-physician services covered under Medicare Supplemental Health Insurance.

<sup>c</sup> Includes benefits paid under Medicare Hospital Insurance and Supplemental Medical Insurance.

Source: HCFA, Office of Financial and Actuarial Analysis.

Table 10.3

ESTIMATED MEDICARE PAYMENTS FOR INPATIENT HOSPITAL SERVICES  
FY 1967-84

<u>Fiscal Year</u>	<u>Actual Outlays (in \$ millions)</u>	<u>Pct. Change</u>	<u>Real Outlays<sup>a</sup> (in \$ millions)</u>	<u>Pct. Change</u>
1967	2,393	---	2,393	---
1968	3,348	+39.9	3,213	+34.3
1969	4,239	+26.6	3,861	+20.2
1970	4,452	+ 5.0	3,828	- 0.9
1971	5,182	+16.4	4,272	+11.6
1972	5,887	+13.6	4,698	+10.0
1973	6,412	+ 8.9	4,817	+ 2.5
1974	7,513	+17.2	5,087	+ 5.6
1975	9,947	+32.4	6,171	+21.3
1976	11,742	+18.0	6,887	+11.6
1977	14,265	+21.5	7,860	+14.1
1978	16,684	+17.0	8,538	+ 8.6
1979	19,067	+14.3	8,770	+ 2.7
1980	22,842	+19.8	9,255	+ 5.5
1981	27,744	+21.5	10,185	+10.0
1982	32,729	+18.0	11,321	+11.2
1983	36,083	+10.2	12,092	+ 6.8
1984	39,050	+ 8.2	12,556	+ 3.8

<sup>a</sup> In 1967 dollars.

Source: HCFA, Office of Financial and Actuarial Analysis.

Table 10.4

**AVERAGE ANNUAL RATES OF INCREASE  
IN ESTIMATED MEDICARE BENEFIT PAYMENTS  
BY TYPE OF PROVIDER**

<u>Type of provider</u>	<u>FY 1973-82</u>		<u>FY 1982-83</u>		<u>FY 1983-84</u>	
	<u>Actual</u>	<u>Real<sup>a</sup></u>	<u>Actual</u>	<u>Real<sup>a</sup></u>	<u>Actual</u>	<u>Real<sup>a</sup></u>
Inpatient hospital	+19.9%	+10.0%	+10.2%	+ 6.8%	+ 8.2%	+ 3.8%
Outpatient hospital	+36.7	+25.5	+14.6	+11.0	+11.9	+ 7.3
Physician	+18.8	+ 8.9	+18.5	+14.8	+10.7	+ 6.2
Skilled nursing	+ 8.7	- 0.3	+10.1	+ 7.0	+ 9.0	+ 4.2
Home health	+26.9	+16.4	+31.4	+27.3	+22.8	+17.8

<sup>a</sup> Deflated by the Consumer Price Index for "all items."

## Payments for Outpatient Hospital Services

The historical pattern of Medicare payments for outpatient hospital services<sup>2</sup> is also represented in Table 10.2. As this table shows, Medicare outpatient hospital payments grew from \$319 million in FY 1974 to an estimated \$3.7 billion ten years later, with the annual rate of increase never falling below 14.6 percent from FY 1974 through FY 1983. In FY 1984, however, estimated Medicare outpatient hospital payments grew by less than 12 percent--the smallest percentage increase since FY 1973.

Table 10.4 describes the increase of Medicare outpatient hospital payments before TEFRA, and under TEFRA and PPS provisions, respectively. As this table shows, the pre-TEFRA annual rate of increase was substantially higher than that under TEFRA and the PPS. In fact, in terms of both actual and real increases, the most recent increase represents the smallest percentage change for any two-year period in the program's history. Despite this fact, however, estimated Medicare outpatient hospital payments outgrew inpatient hospital payments for the eleventh consecutive year in FY 1984.

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<sup>2</sup> It should be noted that, since FY 1973, expenditures in the outpatient services category, as estimated by the Office of Financial and Actuarial Analysis, includes benefits for routine maintenance dialysis treatments for ESRD patients. In FY 1983, these benefits accounted for over 40 percent of all Medicare outpatient services payments. Constraints arising from the revised payment method for ESRD services may thus have had a strong effect in limiting the overall growth of this category.

## Payments for Physician Services

As Table 10.2 shows, Medicare payments for physician services<sup>3</sup> have increased from \$629 million in FY 1967 to an estimated \$14.9 billion in FY 1984--an increase of almost 2300 percent. Even when general inflation is taken into account, physician payments are almost eight times as high now as they were in FY 1967. From FY 1975 through FY 1983, the annual increase in this component of Medicare payments was never smaller than 15 percent, and, although the estimated increase of 10.7 percent in FY 1984 was the smallest in 11 years, it was also greater than the increase in the inpatient hospital component for the sixth consecutive year.

From Table 10.4, it appears that the pattern of growth in Medicare payments for physician services may have changed under the PPS. While the annual rate of increase under TEFRA (18.5 percent) was not substantially lower than the pre-TEFRA average (18.8 percent), the PPS increase of 10.7 percent does seem to represent a considerable slowing in the growth of Medicare physician payments. The real growth rate of this component of Medicare benefit payments was 6.2 percent in FY 1984, compared to 8.9 percent and 14.8 percent for the pre-TEFRA and TEFRA periods, respectively.<sup>4</sup>

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<sup>3</sup> Physician services payment, as estimated by the Office of Financial and Actuarial Analysis, includes payments for durable medical equipment, ambulance services, medical supplies, and other eligible services associated with the provision of physician services.

<sup>4</sup> Effective July 1, 1984, a "freeze" was put on Medicare physician services payment rates, under the provisions of P.L. 98-369. This "freeze," which is to remain in effect until October 1985, makes it difficult to discern the effect that the PPS may otherwise have had on Medicare payments for physician services.

## Payments for Skilled Nursing Services

Medicare payments for skilled nursing services, as shown in Table 10.2, have followed the most irregular pattern of any of the major Medicare payment categories. The annual percentage change in skilled nursing payments has varied from a 254.6 percent increase in FY 1968 to a 28.2 percent decrease only three years later.<sup>5</sup> Over the duration of the Medicare program, skilled nursing payments have increased from \$97 million to an estimated \$545 million--an average of 10.7 percent per year. As Table 10.2 also shows, the annual change in skilled nursing payments has been smaller than that for inpatient hospital payments in all but three of the 17 years of the program.

As discussed in earlier chapters, one of the anticipated effects of PPS incentives was that they would encourage hospitals to discharge patients to post-hospital care more frequently and at an earlier stage of recuperation. It would, then, be expected that the growth rate of skilled nursing payments would increase under the PPS. As Table 10.4 shows, the growth in skilled nursing payments has accelerated somewhat in the past two years. This growth rate, however, is only slightly greater than that for inpatient hospital payments. This trend will continue to be monitored in future reports.

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<sup>5</sup> A large portion of this variation in the growth of Medicare skilled nursing payments is due to a misinterpretation early in the program's history of the purpose of the skilled nursing benefit. There was a tendency early in the program to view this benefit as a long-term nursing home benefit, rather than as an extension of inpatient hospital care, which resulted in a lack of uniformity among intermediaries in making coverage determinations. Action was taken to clarify this concept in Intermediary Letter No. 371, issued in April 1969 by the Bureau of Health Insurance.

## Payments for Home Health Services

Table 10.2 shows that Medicare payments for home health services have increased rapidly in recent years--since FY 1973, the annual increase in this component of Medicare payments has never been below 19 percent. In fact, except for the period of temporary wage and price controls from 1971 to 1974, the annual growth in home health payments has never been less than 15 percent. The growth in home health payments may be contrasted with that for skilled nursing payments, by noting that, while the size of home health payments was barely one-sixth that of skilled nursing payments in FY 1968, 16 years later home health payments were almost four times as high as skilled nursing payments.<sup>6</sup>

As illustrated in Table 10.4, the growth rate of home health payments seems to have continued at its pre-TEFRA level, or higher. In fact, while home health payments increased at a somewhat higher rate than did inpatient hospital payments during the pre-TEFRA period, its estimated growth under the PPS has accelerated to a rate about 4.5 times as high as that for inpatient hospital payments, and more than twice as high as that of any other major benefit category. These figures seem consistent with expectations about the growth of post-hospital care under the PPS (see the discussion above).

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<sup>6</sup> One factor in the growth of Medicare home health payments was the Omnibus Reconciliation Act of 1980 (P.L. 96-499), which liberalized home health benefits under Medicare, by providing for the coverage of an unlimited number of home health visits (as opposed to the previous limit of 100 visits during a benefit period) and eliminating the three-day prior hospitalization requirement as a condition for the receipt of services.

## Total Benefit Payments and Their Distribution

Total Medicare benefit payments increased from \$3.2 billion in FY 1967 to \$49.1 billion in FY 1982, as shown in Table 10.5. This represents an increase of 20 percent per year over that time period--11.8 percent per year greater than the general rate of inflation. Moreover, the yearly increase between FY 1967 and FY 1982 fell below ten percent only twice.

Table 10.6 shows that overall Medicare benefit payments per beneficiary also grew steadily over the pre-TEFRA period, from \$162 in FY 1967 to \$1,666 in FY 1982. This represents an average annual increase of 16.8 percent, or 8.8 percent in real terms.

More recently, growth rates in benefit payments appear to be more moderate, according to the figures presented in Table 10.7. While benefit payments under both Medicare hospital insurance (HI) and supplementary medical insurance (SMI) grew at annual rates of over 20 percent during the pre-TEFRA period, the growth rate of HI benefit payments was sharply reduced under TEFRA, and both HI and SMI benefit payments grew at about half of their pre-TEFRA rates in real terms during the first year of the PPS. As a result, total Medicare benefit payments per beneficiary grew by only 3.4 percent in real terms during FY 1984.

Table 10.8 shows the yearly distribution of Medicare benefit payments by type of provider. In this table, several patterns may be observed:

Table 10.5

**MEDICARE BENEFIT PAYMENTS  
UNDER HOSPITAL INSURANCE (HI) AND SUPPLEMENTAL MEDICAL INSURANCE (SMI)  
FY 1967-84  
(in \$ millions)**

Fiscal Year	HI Payments		SMI Payment		Total Payments	
	Amount	Pct. Change	Amount	Pct. Change	Amount	Pct. Change
1967	2,508	---	664	---	3,172	---
1968	3,736	+49.0	1,390	+109.3	5,126	+61.6
1969	4,654	+24.6	1,645	+18.3	6,299	+22.9
1970	4,804	+ 3.2	1,979	+ 20.3	6,783	+ 7.7
1971	5,442	+13.3	2,035	+ 2.8	7,477	+10.2
1972	6,108	+12.2	2,255	+ 10.8	8,363	+11.8
1973	6,648	+ 8.8	2,391	+ 6.0	9,039	+ 8.1
1974	7,806	+17.4	2,874	+ 20.2	10,680	+18.2
1975	10,353	+32.6	3,765	+ 31.0	14,118	+32.2
1976	12,267	+18.5	4,672	+ 24.1	16,939	+20.0
1977	14,906	+21.5	5,867	+ 25.6	20,773	+22.6
1978	17,411	+16.8	6,852	+ 16.8	24,263	+16.8
1979	19,891	+14.2	8,259	+ 20.5	28,150	+16.0
1980	23,790	+19.6	10,144	+ 22.8	33,934	+20.5
1981	28,907	+21.5	12,345	+ 21.7	41,252	+21.6
1982	34,343	+18.8	14,806	+ 19.9	49,149	+19.1
1983	38,102	+10.9	17,487	+ 18.1	55,589	+13.1
1984	41,476	+ 8.9	19,473	+ 11.4	60,949	+ 9.6

Source: HCFA, Office of Financial and Actuarial Analysis.

Table 10.6

TOTAL MEDICARE BENEFIT PAYMENTS PER BENEFICIARY  
FY 1967-84

Fiscal Year	Total Benefit Payments (in \$ millions)		Medicare Beneficiaries (in thousands)	Payments per Beneficiary	
	Actual	Real <sup>a</sup>		Actual	Real <sup>a</sup>
1967	3,172	3,172	19,521	162	162
1968	5,126	4,919	19,821	259	248
1969	6,299	5,737	20,103	313	285
1970	6,783	5,832	20,491	331	285
1971	7,477	6,164	20,915	357	295
1972	8,363	6,674	21,332	392	313
1973	9,039	6,791	23,545	384	288
1974	10,680	7,231	24,201	441	299
1975	14,118	8,758	24,959	566	351
1976	16,939	9,935	25,663	660	387
1977	20,773	11,445	26,458	785	433
1978	24,263	12,417	27,164	893	457
1979	28,150	12,948	27,859	1,010	465
1980	33,934	13,750	28,478	1,192	483
1981	41,252	15,144	29,010	1,422	522
1982	49,149	17,001	29,494	1,666	576
1983	55,589	18,629	30,026	1,851	620
1984	60,949	19,598	30,593	1,992	641

<sup>a</sup> 1967 dollars.

Sources: HCFA, Office of Financial and Actuarial Analysis and Bureau of Data Management and Strategy.

**Table 10.7**  
**AVERAGE ANNUAL RATES OF INCREASE**  
**IN MEDICARE HI, SMI, AND TOTAL BENEFIT PAYMENTS**

<u>Program</u>	<u>FY 1973-82</u>		<u>FY 1982-83</u>		<u>FY 1983-84</u>	
	<u>Actual</u>	<u>Real<sup>a</sup></u>	<u>Actual</u>	<u>Real<sup>a</sup></u>	<u>Actual</u>	<u>Real<sup>a</sup></u>
HI benefit payments	+20.0%	+10.1%	+10.9%	+ 7.5%	+ 8.9%	+4.4%
SMI benefit payments	+22.5	+12.3	+18.1	+14.4	+11.4	+6.8
Total benefit payments	+20.7	+10.7	+13.1	+ 9.6	+ 9.6	+5.2
Total benefit payments per beneficiary	+17.7	+ 8.0	+11.1	+ 7.6	+ 7.6	+3.4

<sup>a</sup> Deflated by the Consumer Price Index for "all items."

Table 10.8

DISTRIBUTION OF MEDICARE BENEFIT PAYMENTS BY TYPE OF PROVIDER  
FY 1967-84

<u>Fiscal Year</u>	<u>Inpatient Hospital</u>	<u>Outpatient Hospital</u>	<u>Physician</u>	<u>Skilled Nursing</u>	<u>Home Health</u>	<u>Other</u>
1967	75.4	0.5	19.8	3.1	0.7	0.5
1968	65.3	0.8	25.4	6.7	1.2	0.6
1969	67.3	1.1	24.1	5.8	1.2	0.5
1970	65.6	1.4	26.7	4.4	1.3	0.6
1971	69.3	1.8	24.5	2.9	1.0	0.5
1972	70.4	2.1	23.9	2.1	1.0	0.5
1973	70.9	1.9	23.4	2.0	1.1	0.7
1974	70.3	3.0	22.7	2.0	1.3	0.7
1975	70.5	3.6	21.7	1.9	1.6	0.7
1976	69.3	4.2	21.8	1.8	2.0	0.9
1977	68.7	4.6	22.1	1.7	2.1	0.8
1978	68.8	4.9	22.0	1.5	2.2	0.6
1979	67.7	5.1	22.7	1.3	2.3	0.9
1980	67.3	5.3	23.0	1.1	2.3	1.0
1981	67.3	5.4	23.1	1.0	2.3	1.0
1982	66.6	5.9	23.2	0.9	2.4	1.0
1983	64.9	6.0	24.3	0.9	2.8	1.1
1984	64.1	6.1	24.5	0.9	3.1	1.3

- The proportion accounted for by inpatient hospital payments has fallen since the program began, from 75.4 percent to an estimated 64.1 percent. This proportion has fallen steadily since FY 1975.
- The share of payments for outpatient services has increased from 0.5 percent in FY 1967 to an estimated 6.1 percent in FY 1984. This proportion has increased in every year but one since the program began, but it seems to have leveled off over the past few years.
- The share of physician services payments is about the same as it was in FY 1971. However, over the past six years, the share of Medicare benefit payments going to physicians has been rising.
- Since FY 1971, the share of SNF and HHA payments combined has remained between three and four percent. The relative sizes of these two categories has reversed, however--while, in FY 1971, the proportions of payments going to SNF's and HHA's, respectively, were 2.9 and 1.0 percent, in FY 1984, the respective estimated proportions were 0.9 and 3.1 percent.

#### Administrative Costs

Medicare HI administrative expenses increased from \$522 million in FY 1983 to \$633 million in FY 1984, or 21.3 percent. Much of this increase can be attributed to set-up costs for the new prospective payment system. Medicare SMI administrative expenses grew from \$824 million in FY 1983 to \$899 million in

FY 1984--an increase of 9.1 percent. Part of this increase reflects carrier burdens associated with the PPS, such as "re-bundling" and coverage denial information transfer systems with intermediaries.

Overall, then, Medicare administrative expenses grew from 2.4 percent of FY 1983 total program disbursements to 2.5 percent of FY 1984 program disbursements. This increase of \$186 million can, as stated above, largely be attributed to the implementation of the PPS.

#### Discussion

This chapter has reviewed the pattern of Medicare expenditures since the inception of the program in FY 1967. It must be pointed out that, from these data alone, one cannot directly determine the impact of the PPS, for several reasons:

- As indicated in several notes and comments throughout this report, other changes relevant to Medicare reimbursement were occurring during the TEFRA and PPS periods.
- More importantly, the PPS was phased in during FY 1984, in accordance with each hospital's fiscal year. Thus, most hospitals covered by the PPS were paid during at least part of the year under TEFRA provisions, rather than under prospective payment.
- As was pointed out in Chapter 5, a substantial number of hospitals are not covered by the PPS because of waivers or other statutory exception.

- Also, a significant amount of the Medicare payment to hospitals covered by the PPS involves cost-based reimbursements (capital, direct medical education, and kidney acquisition costs) which are not included in the prospective payment rates. It could be several years before all FY 1984 Medicare payments are finally audited and settled.

However, several tentative conclusions may be derived from the data presented above:

- The PPS has slowed the increase in Medicare inpatient hospital payments. Although this increase is still above the general rate of inflation, it represents a downturn in the rapid growth of hospital payments that was seen as the major threat to the solvency of the Medicare Trust Funds.
- The growth rate of outpatient hospital payments has not yet increased as expected. This may reflect a general increase in cost-consciousness among hospitals, or merely a lag in hospitals' responses to the relevant PPS incentives.
- Physician payments also grew at a slower rate in FY 1984. The degree to which the Medicare physician payment rate "freeze" enacted by the Congress affected this reduction in growth is difficult to ascertain.

- Skilled nursing payments represent a shrinking share of overall Medicare benefit payments. Payments for skilled nursing services grew by an estimated 9.0 percent in FY 1984--only slightly faster than did payments for inpatient hospital services--contrary to expectations based on PPS incentives (see the discussion of these incentives in Chapter 2).
- The share of home health payments has tripled in the past 12 years. In FY 1984, the increase in Medicare payments for home health services was over 20 percent for the fourth consecutive year, largely due to the untying of this benefit from the prior hospitalization requirement. Whether there will be a further PPS-induced increase in discharges to home health care is as yet unclear.
- The growth of overall benefit payments appears to be leveling off, apparently due in large part to the lower rate of growth of inpatient hospital payments--the real growth rate of overall Medicare benefit payments was 5.2 percent in FY 1984, compared with 10.7 percent for the pre-TEFRA period of FY 1973-82, and 9.6 percent for FY 1983.
- Real benefit payments per Medicare beneficiary grew by only 3.4 percent in FY 1984, compared with real growth rates of 8.0 percent for FY 1973-82 and 7.6 percent for FY 1983.

These findings lead to some interesting--but necessarily tentative--conclusions about the impact of the PPS during its first year.

As stated above, early information--however tentative--can be valuable in monitoring the performance of a program as fundamental and extensive as the PPS. The presentation of this early information has been the purpose of Chapters 6 through 10. The issues addressed in these chapters--as well as many additional issues relevant to the impact of the PPS--will be further analyzed in future reports.



Chapter 11  
SUMMARY AND CONCLUSIONS

Summary

The purpose of this Congressionally-mandated series of annual reports is to describe and analyze the impact of the Medicare Hospital Prospective Payment System on hospitals, Medicare beneficiaries, other providers of health care, and other payers for inpatient hospital services. In addition, since the impetus for the enactment of the new system stemmed from concern over the financial status of the Medicare program, the impact of the PPS on Medicare program expenditures is also to be monitored and analyzed.

This first report in the annual series, which is to continue through 1987, is devoted largely to the description, rather than analysis, of the PPS and its early impact, for several reasons. At this time, the availability of data suitable for such an analysis is limited. Moreover, the gradual way in which the PPS was implemented implies a similarly gradual development of behavioral responses to the new system. It may be several years before the full impact of the PPS is evident. Therefore, these early data are presented in order to develop a foundation upon which to build a more rigorous analysis of the impact of prospective payment in future reports.

In Part I of this report, the evolution of Medicare hospital payment is briefly traced, from its inception as a retrospective cost-based reimbursement system to modifications aimed at avoiding the impending insolvency of the Trust Funds. The development of prospective payment is then described, from its characterization as a potential solution to the rapid growth of health care costs to the specification of

the operational characteristics of the PPS. The incentive structure imposed and implied by the new system is also examined, in order to describe the expectations of those who developed the PPS, as to the system's positive aspects, and as to its potential negative aspects, as well.

Part I continues with a presentation of the conceptual framework underlying the analysis to be conducted over the next several years, including a consideration of several methodological concerns that are relevant to such an analysis. A key concern is related to the attribution of observed effects-- i.e., when can observed effects be legitimately attributed to a policy stimulus? This issue will continue to receive attention as the evaluation of the PPS continues over the next few years.

The PPS Study Issue Matrix depicted in Chapter 1--and referred to throughout the report-- is meant to aid in clarifying the relationships between the numerous research hypotheses to be considered in the study. While it is clearly a simplification of reality, it provides a focus for the study's design, and an organizational structure to the report. As the system develops over time, the study hypotheses to be considered will undoubtedly also change, and the Matrix will be appropriately modified.

Finally, a description of Medicare administrative data sources is presented, in order to indicate an empirical framework that corresponds to the conceptual framework for the study. Again, as the system develops, the available data sources are also expected to develop, both in terms of comprehensiveness and accuracy, and also in terms of timeliness. HCFA is making a major effort to effect such developments in its administrative data.

Part II of this report contains a description of the available data on the implementation and impact of the PPS. First, the activities connected with the implementation of the new system are described, presenting a picture of a program which has been phased in gradually and without major disruption. About one-half of all hospitals eligible for coverage under prospective payment were participating in the PPS by the end of January 1984--only four months after implementation was begun. By the end of its first year, participation in the PPS was essentially complete. By the legislatively-mandated deadline of November 15, 1984, contracts had been signed with Peer Review Organizations (PRO's) for all 54 designated areas (the 50 States, the District of Columbia, Puerto Rico, Guam/American Samoa, and the Virgin Islands). Initial indications are that these PRO's are taking an aggressive approach to the medical review of hospital activities.

The data on hospital behavior during the first year of the PPS indicate that many of the anticipated effects seem to be occurring, although there are some surprises. Contrary to expectations, Medicare admissions appear to be falling under the PPS. Whether these data reflect the influence of the new system (or the PRO's) or a general trend toward decreased hospital utilization is unclear at this time. Medicare length of stay, as expected, appears to be lower under prospective payment. However, the extent of this decline is surprising--in fact, it is the largest in the history of the Medicare program. Also as expected, the Medicare Case-Mix Index appears to be higher under prospective payment.

Transfers between short-term hospitals also seem to be higher under the PPS, as anticipated. The percentage of outlier cases and, consequently, the percentage of outlier payments are smaller than was initially projected. Also, there is some indication that medical education payments may represent a substantial source of additional revenue for teaching hospitals.

Among the major concerns of the Department is the continued access of Medicare beneficiaries to appropriate health care under the PPS, and the maintenance of the quality of care received by these beneficiaries. Several initiatives have been taken to monitor the impact of the new system on access and quality, including the PRO program and a proposed revision of the Medicare survey and certification procedure to place more emphasis on outcome-oriented criteria. The Office of the Inspector General is also working closely with HCFA to identify problem areas.

Several topics pertaining to the impact of the PPS on Medicare beneficiaries are proposed for future analysis. Of particular concern are the effects of the new system on the cost of care to beneficiaries, and on their access to health care and the quality of care that they receive. Baseline data are used to establish pre-PPS trends that could be monitored as the PPS continues to develop, using data files constructed from Medicare administrative data.

The examination of the impact on other providers of health care focuses mainly on physicians and long-term care providers. Some indication of pressures on physicians to change their patient management behavior due to prospective payment is provided by the responses of a small sample of physicians to a preliminary survey. Data from hospital bills show that the percentage of hospital discharges to long-term care is higher for PPS hospitals than for non-PPS hospitals, indicating that the new system may have an impact on these providers, as well.

Other payers for inpatient hospital services are examined in three groups: State Medicaid programs, Blue Cross and Blue Shield plans, and commercial insurers. Early indications are that a number of State programs have adopted prospective payment and/or DRG-based methodologies, but that the Blue Cross and

Blue Shield plans appear to be more reluctant to adopt prospective payment, opting instead to sponsor alternative mechanisms, such as health maintenance organizations and preferred provider organizations. Data are not yet available to describe the impact of the PPS on commercial insurers.

Data on Medicare program expenditures show that the PPS--and the previous cost control provisions under TEFRA--have apparently had a substantial impact. The rate of growth of inpatient hospital payments has slowed considerably in each of the past two years, resulting in the smallest percentage increase for a two-year period in the history of Medicare inpatient hospital payments. Outpatient hospital payments and physician payments continue to increase at rates well above the general rate of inflation, but at lower rates than at any time in over ten years.

Skilled nursing and home health payments are both increasing at faster rates (in real terms) than they were immediately prior to the PPS. However, the real rate of increase for skilled nursing payments is only barely greater than that for inpatient hospital care, while home health payments--largely due to the removal of the prior hospitalization restriction on these benefits in 1980--have increased at a faster rate than any other component of Medicare benefits. Overall, Medicare benefit payments are growing at a substantially slower rate than they were prior to the implementation of the PPS.

#### Topics to be Addressed In Future Reports

Over the next several years, the analysis of issues relating to the impact of the PPS will continue to be the focus of this series of reports. As described in Chapter 3, many of the issues that were addressed in this first report must

continue to be examined, in order to ascertain whether the effects observed during the first year have continued, and to determine the appropriate attribution of these effects.

In addition, many of the issues which are crucial to the evaluation of the PPS have not yet been addressed in this report. Foremost among these issues is the impact of the new system on the quality of care. Other major issues which are to be addressed in future reports include: the impact on physician treatment patterns; the impact on the volume and severity of long-term care patients; and the impact on the access of Medicare beneficiaries to health care services.

Section 603 of P.L. 98-21 specifies several additional studies which are to be included as part of future annual reports. These studies are described below.

#### 1985 Study Issues

In addition to its ongoing mandate, the 1985 annual report is to address a set of topics directly related to technical refinements and extensions of the new payment system. These topics are specified as follows:

- (1) The feasibility and impact of eliminating or phasing out separate urban and rural DRG prospective payment rates;
- (2) Whether and how hospitals not currently paid according to the PPS methodology can be paid on a prospective basis;
- (3) The appropriateness of the PPS methodology for compensating hospitals

for the additional expenses of outlier cases, and the advisability and feasibility of applying severity of illness, intensity of care, or other modifications to DRG prospective payment rates;

(4) The feasibility and desirability of applying the PPS methodology to payment by all payers for inpatient hospital services; and

(5) The impact of the PPS on hospital admissions, and the feasibility of making a volume adjustment in the DRG prospective payment rates or requiring pre-admission certification, in order to minimize the incentive to increase admissions.

These topics address highly technical issues that could not be resolved at the time of the PPS legislation. The Secretary is thus mandated to analyze these topics, and to recommend the feasibility and advisability of various improvements to the PPS. Further, certain of these topics extend more directly to the PPS context the examination of issues previously treated on a less technical level in a separate report to Congress.

The request for a report on the feasibility and impact of eliminating or phasing out separate urban and rural DRG payment rates reflects the desire of the Congress to achieve a single national rate as early as is feasible. At issue in the matter of urban and rural rate differentials is the allegedly higher input costs--for example, labor costs--for hospitals in metropolitan areas. Congress has here requested a more careful analysis of the basis for these differential rates. In addition, this report is to include a Congressionally-mandated analysis of the impact of computing DRG prospective payment rates by census division, rather than exclusively on a national basis.

The Congress has also requested a report investigating the development of a method under which hospitals currently excepted from the PPS can be paid on a prospective basis. P.L. 98-21 established four types of hospitals, and in certain cases units in hospitals, to be excepted from prospective payment:

- Psychiatric and substance abuse hospitals and units in hospitals;
- Children's hospitals, defined as hospitals with a mean patient age of less than 18 years;
- Medical rehabilitation hospitals and units in hospitals; and
- Long-term hospitals, defined as hospitals with a mean length of stay greater than 25 days.

The regulations implementing this legislation determined a process through which these hospitals and units would have to apply for excepted status.

In excepting these hospital types, Congress apparently recognized the inability of the current prospective price determination procedure to devise appropriate prices for their service (see Chapter 2). The question of whether these hospitals can be paid under prospective payment hinges on the development of a patient classification system (or several such systems) which support the equitable reimbursement of these types of inpatient services.

The report on modifications to DRG prospective payment rates was requested by the Congress in consideration of the refinement required by any new program. This report is to address several topics:

- Outlier payments--this study is to assess the appropriateness of the current system of payment for exceptionally long or costly hospital stays;
- Severity of Illness and Intensity of Care--this study is to focus on the issue of tracing and capturing systematic bias in the reflection of resource intensity within DRG classifications; and
- Other DRG modifications--the PPS legislation requires the recalibration of DRG relative weights, for determining the FY 1986 prospective payment amounts.

In addition, it is expected that several additional issues related to DRG modifications will arise as the PPS is implemented.

The report on all-payer systems was requested by the Congress in response to the perception that hospitals, reacting to the cost constraints imposed by the PPS, may attempt to raise their charges to patients covered by payers other than Medicare. A study of State all-payer systems is to be conducted, as well as a study of the response of Medicaid programs to the prospective payment system.

The impact of the PPS on admissions is being carefully monitored by HCFA, through the PPS Monitoring System. Regular reports are made on trends in the level of admissions, especially those coinciding with the implementation of the PPS. These efforts will continue, and the attribution of any observed trends will be carefully investigated (see the discussion in Chapter 3). A review is also to be conducted of approaches to the measurement, control, and reimbursement of excess admissions. Further efforts will be dependent upon the findings on the impact of the PPS on admission levels.

#### 1986 Study Issues

In the annual report for 1986, the Secretary is to include the results of a study examining the overall impact of State systems of hospital payment, for those States with waivers from inclusion under the PPS (see Chapter 2). This study is to particularly focus on the assessment of such systems' impact not only on the Medicare program, but also on the Medicaid program, on payments and premiums under private health insurance plans, and on tax expenditures.

The Department of Health and Human services has initiated a wide variety of research activities designed to support the preparation of these and several other Congressionally-mandated reports, and also to address the many additional issues that are raised by the new prospective payment system.

#### Conclusions

The data presented in this report describe several aspects of the performance of the health care sector during the first year of the Medicare Hospital Prospective

Payment System. Although the PPS directly affects only hospital behavior, it seems likely that the impact of the new system will be felt by many other groups of providers, consumers, and payers for health care. Moreover, although the major thrust of prospective payment is economic in nature, the PPS may have an effect on access to health care, and on its quality, as well.

For the first year, however, the extent the impact of the PPS is difficult to ascertain. As discussed above, the gradual implementation of the PPS makes it likely that its full effects will not be felt until future years, when prospective payment has been in place for a while and the affected groups have become more accustomed to its provisions and incentives. In addition, the dynamic nature of the health care sector serves to complicate any attempts to trace observed changes to any specific policy initiative.

The problem of attribution will continue to arise as the impact of the PPS is assessed in the coming years. Moreover, the implications of observed changes in the health care sector will be difficult to interpret. The possibility of trade-offs between economic considerations, quality, and access to care must be considered as the empirical evidence on the impact of the PPS is analyzed.

Nonetheless, however valid the reservations about using early data to draw conclusions about the impact of the PPS, it is important to at least attempt some tentative observations about the changes occurring during the first year of prospective payment. These observations are necessary to indicate whether progress is being made toward accomplishing the objectives of the new system--whether or not the observed changes can be conclusively attributed to the PPS.

The findings reported in the preceding chapters lead to several conclusions about the impact of the PPS in its first year. The new system appears to have been implemented smoothly, and to have encouraged substantial changes in the behavior of hospitals and of other major groups within the health care sector. Many of these changes are as anticipated by those who designed and enacted the PPS, although some changes--particularly the drop in Medicare admissions--were not anticipated. Furthermore, the rate of growth of Medicare benefit payments appears to have decreased under the PPS, led by a decline in the growth of inpatient hospital payments. Thus, early evidence on the new system indicates that it is accomplishing many of its stated objectives, without any major problems thus far. Based on these findings, no legislative changes are recommended in this report.

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### January 1986 Edition

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